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THESIS

**KAZAKHSTAN, STRATEGIC PROBLEMS OF AN
EMERGING REPUBLIC**

by

Lewis D. Madden

June 1993

Thesis Advisor:
Second Reader:

James J. Wirtz
Roman A. Laba

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93-27030



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REPORT DOCUMENTATION PAGEForm Approved
OMB No 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE June 1993	3. REPORT TYPE AND DATES COVERED Master's Thesis	
4. TITLE AND SUBTITLE KAZAKHSTAN, STRATEGIC PROBLEMS OF AN EMERGING REPUBLIC			5. FUNDING NUMBERS	
6. AUTHOR(S) Madden, Lewis D.				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Postgraduate School Monterey, CA 93943-5000			8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)			10. SPONSORING / MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.				
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release, distribution is unlimited.			12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) This thesis uses utility theory to derive an equation expressing the utility of deterrent strategies. The resulting equation is then tested against the deterrent options available to the newly independent Republic of Kazakhstan. It predicts the failure of current United States policy and the retention, by Kazakhstan, of some form of nuclear deterrence in order to counter Russian aggression brought on by ethnic unrest in Kazakhstan. It further suggests that the deterrent option chosen by Kazakhstan may be irrationality-based deterrence which may lead to the development of some form of "doomsday machine."				
14. SUBJECT TERMS Kazakhstan, Deterrence, Nuclear Proliferation, Central Asia, CIS			15. NUMBER OF PAGES 140	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT U1	

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EMERGING REPUBLIC**

by

Lewis D. Madden
Captain, United States Navy
B.S., Naval Academy, 1967
M.S. Naval Postgraduate School, 1977

Submitted in partial fulfillment
of the requirements for the degree of

MASTER OF ARTS IN NATIONAL SECURITY AFFAIRS

from the

NAVAL POSTGRADUATE SCHOOL

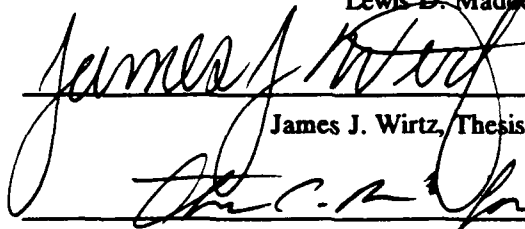
June 1993

Author:



Lewis D. Madden

Approved by:



James J. Wirtz, Thesis Advisor



Roman A. Laba, Second Reader



Thomas C. Bruneau, Chairman
Department of National Security Affairs

PREFACE

Almost since the beginning of the nuclear age strategists and policy makers have struggled to develop policies which would deter, or failing to deter, to win a nuclear war. Like the subject matter, this debate has frequently generated more heat than light.

The participants in this vital and on-going effort span the spectrum from those who believe, "that even to think about a war, which they believe will cataclysmically end life on earth, is immoral," to those who believe that a nuclear war is not only practicable, but is winnable. It is no wonder that there has been little agreement on the effectiveness, usefulness or even morality of deterrent strategies.

Despite the hopes of most of mankind, the collapse of the Soviet Union has not lessened the importance of this international debate on deterrent strategies. The proliferation of nuclear weapons, nuclear technology and other weapons of mass destruction can only increase our sense of urgency as we come to face a world with many more nuclear actors, and a world in which some of these may not be rational in the common sense of the term.

The purpose of this work is to begin the development of a methodology for the evaluation of deterrent policies. This is not intended as a theoretical exercise. It is intended to be a practical tool for use by the decision maker. As such, this methodology must possess several key features; it must first be capable of capturing

the subtleties of a policy and expressing complexity lucidly. It must provide a logical framework for analyses which are clear, useful and self-consistent. Finally, in order to be useful to the strategist, these results must be repeatable, testable and predictive.

This basic methodology is developed in Part II of this work. In it that deterrent policy may be evaluated by the use of equations derived from Utility Theory. These equations explore the expected utility of the various possible outcomes of a strategy. Some of the coefficients in these equations are objective values, such as "the cost of defensive systems," and some are subjective values, such as "the benefits of victory." Techniques exist to determine the relative values of subjective variables as perceived by the decision-maker, and then to combine these with the relative worth of the objective variables. The extension of these techniques such as Multi-Attribute Decision Making and Analytical Hierarchy Process (AHP) must wait for further analysis. For the purposes of this study and the analysis of courses of action for the government of Kazakhstan we have used the "Rational Man" approach. That is to say "if the rational man were a Kazakh with all the historical experiences and societal constraints, how would he subjectively evaluate outcome of various deterrent strategies?"

In order to employ the Rational Man technique it is necessary to develop an understanding of the historical forces which formed the Kazakh people. It is necessary to understand the society, value structures and national interests. Part I of this work explores Kazakhstan and the Kazakh people in detail. In understanding

the national policy, emphasis is placed on the attitudes of the ethnic Kazakh. It is the perceptions of the ethnic Kazakh which set Kazakhstan apart from the rest of the world. If the ethnic Kazakh lose power and Kazakhstan is again ruled as a part of Russia then Kazakhstan has no independent deterrent policy and this analysis is unnecessary.

The reader who is familiar with Central Asia and Kazakhstan, or who is interested primarily in the derivation of the valutive methodology may skip Part I and go directly to Part II; however, in this case, some of the analysis may become unclear.

I wish to thank Dr. Jim Wirtz for his unfailing interest and encouragement. Without his support I would never have attempted such an ambitious task and without his confident guidance I might never have completed it. I also owe a debt of gratitude to Dr. Roman Laba for precipitating my interest in the former Soviet republics. It was his unequaled insight and encyclopedic knowledge of the former Soviet Union and the newly formed republics and his understanding of current developments which made so much clear. Lastly I wish to thank Dr. Bill Kemple for his advise and for taking the time to review the derivation of the utility equations which are the heart of this work.

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ABSTRACT

This thesis uses utility theory to derive an equation expressing the utility of deterrent strategies. The resulting equation is then tested against the deterrent options available to the newly independent Republic of Kazakhstan. It predicts the failure of current United States policy and the retention, by Kazakhstan, of some form of nuclear deterrence in order to counter Russian aggression brought on by ethnic unrest in Kazakhstan. It further suggests that the deterrent option chosen by Kazakhstan may be irrationality-based deterrence which may lead to the development of some form of "doomsday machine."

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PART I, KAZAKHSTAN

I. INTRODUCTION

The last decades of the twentieth century have seen the historically unprecedented implosion and collapse of the Soviet Empire. Political, economic and social relationships, stable for 70 years have, in the space of 20 months been almost completely rewritten by a tidal wave of discontent. From the viewpoint of the rest of the world, as well as the governments and peoples of the former USSR, one of the most critical issues is the future of the emerging sovereign republics.

In the wake of Perestroika the emerging republics of the former USSR have assumed global importance. Certainly the shape of modern Eurasia and perhaps the stability of the rest of the world will rest on the conditions in the newly independent republics. Hence, it is of vital importance to understand the relationships being forged between the new republics. In doing so we must answer several key questions which will predict the possibility of peaceful relations. First, with regard to inter-republic relations; can historical animosity be countered by economic necessity? Second, and interior to the republics; can the social and political structures common to all the republics, which were grafted on or created out of whole cloth by the Communist Party, stand in the face of resurgent ethnic animosities? What will be the fate of the non-indigenous peoples who were resettled for reasons of state policy? Will the results of a new social contract be integration and tolerance or segregation and discrimination? Third, can the new republics achieve a stable form of democracy

and then establish the peaceful and cooperative inter- and intra- republic relationships which would allow them to address their enormous problems of environmental damage, obsolescent economies in ruins, runaway ethnic ambitions and problems of security which may involve nuclear weapons?

Conflict in any corner of the former USSR could conceivably lead to a full scale conflagration, but the four republics with nuclear arms demand particular attention. Ukraine, Belarus, Kazakhstan and of course the Russian Federation each became de facto nuclear powers when they inherited that portion of the strategic arsenal which was based on their soil. Of these four the situation in Kazakhstan may be perhaps the most complex. Because of its unique position it would be worthwhile to examine Kazakhstan in some detail.

II. KAZAKHSTAN IN HISTORICAL PERSPECTIVE

Kazakhstan is the second largest member of the former USSR. With an area of slightly over 1,000,000 square miles, it is approximately the size of Western Europe. Sparsely populated by 16.5 million Kazakhs, Slavic Europeans and assorted other ethnic groups Kazakhstan claims over 16% of the USSR's grain producing lands, the second largest proven mineral reserves and a portion of the Soviet strategic arsenal. In addition, Kazakhstan is home to the Baikonur space launch complex and in the northeast the Semipalatinsk nuclear testing grounds. To understand the current social and political situation in Kazakhstan it is necessary to understand the historical forces which have formed the Kazakh nation.

As described by L. Krader, The history of Central Asia may be divided into three periods. In the first period, from about 500 B.C. to 900 A.D., the Central Asian populations were of predominately Iranian origin. During this period, animal husbandry and irrigation agriculture became wide-spread. Islam was introduced by Arab merchants and conquerors. Trade became more profitable when stable trade routes were established between the Far East, the Middle East and South Asia. This period was brought to a close by waves of Turkish raiders who eventually conquered and having settled were converted to Islam. (Krader, 1962, pp. 73-74)

The Second, or Medieval Period, extended from 900 A.D. to 1700 A.D. This period saw the flowering of Islamic culture and then assaults on that culture by the

Mongol invasions, the establishment of the Mongol Chingisid Empire and the dissolution of the empire into numerous small successor states.

The Modern period, beginning in 1700 A.D., is principally the story of the incorporation of Central Asia into the Russian Empire. Commencing with the establishment of a Tsarist fort at Omsk in 1716, through the conquest of the Kazakh steppe in the 19th century and ending with the incorporation of the last independent Khanates, Khiva and Bukhara, into the Soviet Union in 1921, the expansion of the Russian Empire was unrelenting. It remains to be seen whether this tide has turned in the closing years of the twentieth century.

Under Soviet rule, the policy of national delimitation, created five nations from the peoples of Central Asia; the Kazakh, Uzbek, Turkmen, Kirgiz and Tajik Soviet Socialist Republics. (Simon, 1991, p. 79) This Soviet strategy was intended to combat the attraction of Pan-Islamic and Pan-Turkic ideals by developing a sense of nationhood among the hitherto tribal peoples. This sense of separateness was fostered through the creation of separate written languages, the publication of new and partially fictional histories and a stress placed on political and cultural separateness rather than the commonality of local peoples. Economic systems were integrated bilaterally with Russia, rather than horizontally with neighboring republics. In counterbalance to this newly created sense of nationhood, the party and the state were ruthless in stamping out any opposition to Soviet policy and rule. Few nations or peoples in the Soviet Union were subjected to such intense pressures as the Kazakhs, whose society and very land were irrevocably changed by the process.

A. PRE-TSARIST HISTORY

The Kazakh trace their origin to an amalgamation of peoples formed in the wake of successive waves of Turkic and Mongol invaders.

In the earliest periods of Central Asian history, pastoral and farming peoples migrated northward from Iranian cultural centers. Here they established centers of agriculture along the major river valleys, developed large scale irrigation projects, and established trade routes with civilizations further to the east. Drawn by rich plunder and forced by population pressure the Turkish invaders came first to raid and then to rule. By the beginning of the thirteenth century, the Turks had established firm control over most of Central Asia. Large scale conversions of the Turkic peoples to Islam strengthened the position of Islam as a state religion. By the end of the 11th century a Turkish dynasty, Korezm-Shah had established itself as the secular power for all of Eastern Islam. (Simon, 1991, p. 83)

To the north Temujin, son of the Mongol chieftain Yesugai, completed unification of the Mongol tribes around Lake Baikal in 1206. After establishing his capital in Karakorum he proclaimed himself Chingis Khan and commenced conquest of the world as he knew it. After having overcome the Chin empire in 1215 and later Kara-Khitai in Northeast Kazakhstan, he found the pretext for a new war in the alleged mistreatment of his ambassadors by the Turkish ruler of Korezm (Persia and Northwest Kazakhstan). Gathering a force of 200,000 men he destroyed the kingdom, and then pursued the ruler of Korezm, Shah Alaud-Din Mohammed, to his

death on the shores of the Caspian Sea. (Encyclopedia of Military History, 1986, pp. 336-337)

The conquest of Central Asia by the Mongol tribes under Chingis Khan was a disaster for the entire region. Among others, the cities of Samarkand, Bukhara and Tashkent were ruined. The irrigation systems were destroyed and large scale agriculture became impossible. Some of those systems have not been fully rebuilt to this day. Crop failure and famine followed throughout Central Asia. Throughout this portion of the Mongol empire the era of warring states had come to an end and there was peace, albeit the peace of the grave.

The Mongols made no conscious effort to change indigenous social structures. Rather they made use of local rulers, under close supervision, to collect taxes and administer the conquered peoples. It was under the enforced peace of the Mongols that the trade routes were once again opened. In time the new rulers were also converted to Islam, and by the time of Uzbek Khan (1313-1340) Central Asian rulers were routinely Muslim. (Lapidus, 1991, p. 418)

Paradoxically it was one of the strengths of the Mongol social structure which helped bring about the empire's speedy dissolution into ever smaller warring states. The nomadic societies of Central Asia are patrilineal in nature. They are tightly bound by tradition and custom which, as well as providing structure, serve to prevent conflict by a predetermination of most issues which could cause dissension. Among the Turko-Mongol nomads property was divided equally among the heirs. The kingdom of the Great Khan was considered his personal property and upon his death

it too was divided, according to the custom among his heirs. Before very many generations had passed the empire had been reduced to many small and not very cooperative states.

Chingis Khan left to his eldest son, Juchi, the Kipchack Steppe as his inheritance. The second son, Chagatay, received Samarkand, Bukhara and territory to the east as his domain, or *Ulus*. The Kazakh established themselves in the eastern portion of Chagatay's *Ulus*. Tracing their lineage to a common great founding ancestor, Alash, they numbered around 1,000,000 in the latter half of the Fifteenth century. This concept of lineage and genealogy is an important force in Central Asian society and will be discussed more fully in a later section.

The Kazakhs were briefly united under Kasim Khan; however, with his death and the decline of the Golden Horde, the Kazakhs split into the Great, Middle and Lesser Hordes. The Lesser Horde was the western most, closest to Russia; the Great Horde was the eastern most, closest to China.

B. RUSSIAN CONQUEST

The Kazakhs were forced into the arms of advancing Russian imperialism by defeats on their Eastern frontier at the hands of the Kalmyks. Under constant pressure from these aggressive neighbors of mongol descent the Kazakhs had steadily lost ground since the early Seventeenth century. It was as much to forestall the establishment of an aggressive Kalmyk state on the Russian border as to acquire the Central Asian steppe that Russia accepted oaths of fealty from Abu'l Khayr in 1731. (Olcott, 1987, p. 31) The initial alliance with Russia was not restrictive, however the

years saw increasing Russian involvement in Kazakh affairs until in the end Russia sought to completely control the Kazakh people. While the Khans might be persuaded to accept Russian rule the individual families remained unconvinced. The Kazakh as a whole did not go peacefully into the Russian Empire. A series of revolts in 1783 and 1797 were followed by 60 years of guerrilla warfare. In 1824 the Kazakh Khanates were abolished and direct rule established. The offshoot Bukey Horde revolted in 1838. There was a major effort to break free in 1847, and a bloody uprising in the name of Islam in 1868. However, with their victory in 1868, Russia could at last claim full and firm control over Kazakhstan.

The Russian conquest was initially a simple military occupation, uncomplicated by Slavic settlers looking for land or trade. The administration of the territories was entrusted entirely to military authority, which for reasons of economy made extensive use of the existing power structure. The Russian administration was paralleled by indigenous Kazakh institutions. This arrangement allowed effective control of the population and reduced the costs of the occupation.

Russian policy did not seek to integrate the Kazakhs into Russia itself. They were treated as aliens, exempted from military service and discouraged from mixing with the Russian population. As a matter of policy the Tsarist administration attempted to weaken Kazakh society. Because of this, the Russian occupation was even more of a disaster than the Mongol invasion. Kazakh city dwellers were expelled, lands were confiscated and Quran schools closed. Russian officials continually attempted to weaken the influence of Islam. Because of Russian

ignorance, these efforts were somewhat counterproductive. Professor Grigoriev, a nineteenth century scholar and imperial advisor (Olcott, 1987, p. 128) commented on the difficulties of forming an effective Russian policy:

Still worse results followed; another misunderstanding of ours was, that the Kazakhs were Mohammedans, whereas in the last century they were almost all Shamanists. At the epoch of their nominal union with Russia only a very few of the Khans and Sultans had even a confused idea of the dogmas of Islam and performed some few of the rites. Not a single mosque then existed in the Kazakh Steppes, not a single mullah performed there the rites of the Mussulman religion, and if since that time the Kazakhs have really become Mussulmans to a considerable degree, it is only owing to our taking them for Mussulmans and treating them as such.

The dispersion of the predominately Islamic city dwellers to the country-side, combined with Russian assaults on Islamic practice, appear to have converted Islam into the national religion as a form of protest.

C. POST-CONQUEST KAZAKH SOCIETY

Prior to conquest, the Kazakh people were organized in the form of a series of concentric circles. The inner-most, the individual, was surrounded by his extended family. The family was inclosed in the village and the villages in turn formed a clan. Clans, joined by genealogies to a common ancestor joined together in confederations. These confederations formed the basis of the state, the Khanate. (Krader, 1962, pp. 150-153)

The individual in his extended family was the member of an entity similar to a corporation, which like a modern corporation was immortal, could hold property, restricted membership, provided services to its members and demanded service in return. The extended families formed villages, *Qishlaqs*, for the farmers or *Aul* for

the nomads. The villages were bound together by blood and marriage and when they were grouped together, with other kin related villages, they formed a clan.

After conquest the Kazakh social structure was shoehorned into the Russian format. Both sedentary and nomadic villages were organized in much the same way. The villages were run by an elected elder, *Aqsaqal* (*aq* white, *sakal* beard), usually from the ruling group. Several villages, composed a *Volost*. Groups of families, usually five, were represented by electors. These electors in turn choose the *Volost* leaders and judges. (Allworth, 1967, pp. 153-154) The original social structure of the Kazakhs was incompatible with the imposed Russian structure. As a result the Kazakh society devolved into the smallest social unit which would fit within the Russian structure, the kin-village. The clans did not vanish but remained with diminished material importance but significant social value. Clan membership gave and continues to give a sense of belonging to the individual Kazakh. It provides a mortar to hold the people together.

Contact with the more industrialized and wealthy Russian culture was not without effect. By the late 1800's, some Kazakh intellectuals had developed theories favoring assimilation. A small number of intellectuals had attended Russian schools and then gone on to serve in the army or in the provincial administration. From this experience they believed that a collaboration was possible between the Russian and Kazakh peoples. Several schools were opened for teachers. Educators were trained in a Russian style of education using Kazakh and a Cyrillic alphabet. Kazakh

assimilationist desires were short lived. They ended with the first wave of immigrants from European Russia. (Lapidus, 1991, p. 763)

D. TSARIST IMMIGRATION, THE FIRST WAVE

Drawn by cheap and apparently unoccupied virgin land, settlers from western Russia began to arrive in increasing numbers. They seized pasture for farmland and blocked traditional migration routes. The already hard pressed Kazakh were further restricted. Between 1896 and 1916 more than 1,000,000 peasants settled in the region of Turgay, Akmolinsk (Tselinograd), Semipalatinsk and in the Khirgiz lands to the south. (Allworth, 1967, pp. 160-161) The Russians brought farming to the Kazakh plains. Starting in 1896, when there was almost no land under cultivation, by 1913, 38 million acres (8.3%) of the Steppe oblasts were planted in wheat, millet and other grains. (Allworth, 1967, p. 282) When the Kazakh nomadic tribesman was forced from his best grazing grounds and found traditional migration routes blocked by vast estates, he had no other choice than to become a farmer himself. This transformation, driven by hunger and economic necessity, was difficult and slow. As an intermediate step in this transition many herdsmen became a sort of rancher, sedentary herdsmen who raised livestock on fodder. A centuries old way of life was dying, painfully. The already low Kazakh standard of living was reduced to new levels of poverty by the expropriation of land for settlers, reduction in herds and grazing rights, and by exploitation of the herdsmen by Russian merchants.

Resentment of the Russians was high. They were blamed for every wrong, from cholera to locusts and from weather to taxes. The decades of Tsarist rule are one

long history of secret societies and spontaneous popular revolts led by charismatic leaders who focused the free-floating resentment of an angry population.

In the last years of the Russian empire the Kazakhs once again revolted. In 1916 World War I was not going well for Russia. Shortages of manpower led to the conscription of the previously exempt Kazakhs for non-combattant duties in construction battalions. Shortages of horses in the army led to the requisitioning of Kazakh horse herds. Inflation and the costs of the war led to an increase in taxes, in some cases up to 15 fold. These grievances came to a head in the bloody revolt of 1916. Although it was unsuccessful and put down with great severity the revolt of 1916 left embers which would smolder and ignite in the numerous national movements during the Russian revolution of 1917.

E. THE 1917 RUSSIAN REVOLUTION

Exhausted and beaten in the aftermath of the ruthless suppression of the 1916 revolt, the majority of Central Asian peoples took no part in the Russian revolution. Instead they waited, and watched the outcome, with some hope and a faint optimism. They were disappointed. The former subject peoples were soon alienated by the ineptness of the Provisional Government and by the skillful politics of it's Bolshevik opponents. Two issues were of the greatest concern to the Central Asian peoples: first, what degree of independence would be permitted to the subject peoples by the Provisional Government; and second would confiscated lands be restored? The Provisional Government was unable to satisfy the Kazakhs on either count. Political attempts at accommodation failed when the Russian administrators reflexively

resisted a loosening of control in the southern provinces. Land restoration was impossible for reasons of ethnic sentiment and practical internal Russian politics. The Provisional Government could not seriously consider dispossessing the Russian immigrants. Predictably, politics in Central Asia split along ethnic lines. Support for the Provisional Government collapsed.

By the time of the October Revolution in 1917, the plains of Central Asia were aflame. Throughout the area political movements struggled against the ethnic Russians, the Whites, the Reds and each other. In what was to become Kazakhstan, the most important of these national liberation movements was the *Alash Orda*, the Horde of Alash, named for the mythical founder of the Kazakh people. The Alash Orda became the leading political force on the plains. At the Third Kazakh congress, convened at Orenburg in December, 1917, the Alash Orda proclaimed Kazakh autonomy and elected an executive to manage the struggle for independence. In a complicated three sided civil war, the Kazakh leaders first attempted to join the Whites, who were under Kolchak in the east, and then with the Bashkirs in the west. When they were rejected by both, the Alash Orda joined with the Bolsheviks after receiving assurances of safety for themselves, their troops and promises of autonomy for Kazakhstan. (Allworth, 1967, pp. 236-238) In the end the Kazakhs had chosen the winning side and the White counter-revolution was defeated.

F. REABSORPTION

On August 26, 1920, the Kirgiz [sic] Autonomous Soviet Socialist Republic (KASSR) was created as part of the Russian Soviet Federative Socialist Republic

(RSFSR). The term "Kirgiz" was then applied to both the Kazakh and Kirgiz national areas. The Constituent Assembly of the KASSR declared an end to colonialism in October 1920 and opened the way for recovery of expropriated lands in April of 1921. (Allworth, 1967, p. 239) This was not as bold or as independent a move as it might first appear, it simply seconded a June 29, 1920 declaration by the Politburo of the Russian Communist Party titled, "Our Tasks in Turkestan." In this resolution the Central Committee offered the bait, redress of colonial wrongs, embedded with the hook, the establishment of central control. The announced intent of the resolution was:

1. To take away from the settlers in the Kirghiz [Kazakhstan] districts all land allocated by the [pre-revolutionary] Migration office...
2. Provide landless *dekhans* [peasants] with land.
3. To smash all *kulaks* [well-to-do settlers] organizations...
4. Deport into Russian concentration camps...Tsarist officials whose employment in Turkestan is politically unacceptable...
5. ...Transfer and place at the disposal of the Central Committee all those Turkestan communists who are infected with the colonialist spirit and Great-Russian nationalism, and at the same time to conduct in the center the mobilization of several hundred Communists for work in Turkestan. (Nahaylo and Swoboda, 1990, p. 43)

Submerged in the popularity of land reform and hidden behind the perceived necessity of safeguarding the revolution, the Central Committee had firmly established that local parties were completely subject to central control. This popular removal of anti-muslim, anti-native factions was in reality the first purge. More would follow.

As a member of the Russian Soviet Federative Socialist Republic (RSFSR) the Kirgiz Autonomous Soviet Socialist Republic (ASSR) had little real freedom of action. By decree of the Central Committee, June 1919, the RSFSR reserved for federal control the functional areas of transport, finance, military, economic and labor affairs.

When the Union of Soviet Socialist Republics (USSR) was formed in 1924, the Kirgiz ASSR entered as a part of the RSFSR. Shortly thereafter the Kirgiz ASSR was divided into two parts. The portion inhabited primarily by the Kazakh people was combined with the Syr-Darya Oblast and renamed the Kazakh ASSR. After several additions and deletions the remaining portion became the Kirgiz ASSR in 1926. The constitution of 1924 reclaimed still more functions for the central government by adding to the list of reserved powers, foreign affairs, foreign trade, internal trade, defense and communications.

On December 5, 1936, Kazakhstan was accorded the status of "Soviet Socialist Republic." This new status meant little in the way of independence, because the constitution of 1936, the "Stalin Constitution," had completed the process of reabsorption by reserving for All-Union jurisdiction control of the individual SSR constitutions. This control included the right to ensure conformity of the SSR constitutions with the USSR constitution. (Krader, 1962, pp. 112-113) Independence, such as it was, had been short lived.

The national parties came under assault from the beginning. Administrative actions, transfers, and purging or ejection from the Communist party and from the

body politic were common. In these early times to be "purged" did not have the finality it would acquire in later years. The communist party led government of Kazakhstan but it was in conflict with Moscow almost from the beginning. Not unexpectedly, conflict centered around autonomy and land reform. Initially, the Kazakh Communist Party CP(K), supported "Kazakhstan to the Kazakh" and attempted to ensure that the CP(K) was a truly Kazakh party. In furtherance of this, at the 5th Kazakh Party Conference in 1925, the CP(K) declared a virtual moratorium on immigration into Kazakhstan for ten years. Reaction was swift. At the 6th Conference in 1927 the CP(K) was forced to renounce this "Trotskyite-Zinoviev" line (Simon, 1991, p. 81) and shortly thereafter the Kazakh leadership of the CP(K) was removed. Their places in the Party Secretariat were taken by Russians, who under F.I. Goloshchokin, were later replaced by europeans under an Armenian, C.I. Mirzoyan. This established a pattern which would continue well into the future. Whenever the local government came in conflict with Moscow, the local government would be replaced by outside party officials who would settle the matter to Moscow's liking. Some time later the Kazakhs would again be given the wheel--until next time.

G. COLLECTIVIZATION AND THE SECOND WAVE OF IMMIGRATION

In Kazakhstan the physical liquidation of leaders and cadre peaked in 1935. The purging of the leadership was hardly necessary. Their morale and will had long since been broken by the terrible events of collectivization.

Collectivization was a disaster unparalleled in the long Kazakh history of disasters. In Kazakhstan the purpose of collectivization was not only to increase grain production, but also to restructure and sedentarize Kazakh culture. In 1930 the large scale settlement of nomadic herdsmen was begun with almost no preparation at all. Clans were moved to distant districts, and settled without adequate food, water or shelter for their livestock. Promised housing was uncompleted and construction materials were unavailable. In some cases, the available housing was of such a low quality that the nomads put the livestock in the houses and lived themselves in their yurts. (Simon, 1991, p. 107) Utter confusion prevailed, and after a while authorities sought only to protect themselves by hiding their failures. Between 1929 and 1933 livestock herds fell from 40 million head to 5 million head. The Kazakh population fell from 3.9 million to 3 million, a decrease of 21.9%. Allowing for the out migration of herdsmen to other Soviet republics and China, and allowing for the normal rate of population increase, the Kazakh population is believed to have lost over 1.5 million people. The actual percentage loss to the population living in Kazakhstan may have been closer to 40%. (Krader, 1962, p. 185-6) In parallel with this catastrophe a second wave of immigration occurred during the period 1926-1939. Over 1.7 million immigrants arrived in Kazakhstan and Central Asia from Western Russia. (Simon, 1991, p. 119) The effect on Kazakh society was traumatic. According to Simon, "The terror of collectivization broke the Kazakh resistance and increased their willingness to live under the existing conditions and use them to their advantage." (Simon, 1991, p. 109) While the ever resilient

clan and family structure survived open resistance ceased. Having adopted a strategy of cooperation in order to survive, the Kazakhs have become the best represented Asian people in the Communist party and in the Soviet society as a whole. In 1979 52% of Kazakhs spoke Russian as a second language. As a people they were members of the Soviet elite in disproportionately high numbers. (Simon, 1991, p. 109)

H. SOCIAL STRUCTURE UNDER THE SOVIETS

Just as after the Tsarist conquest; after collectivization the Kazakh people again had to adapt to a newly imposed social structure. The Soviet rural matrix in Central Asia was composed primarily of the *Kolkhoz* (Collective farm) and the *Sovkhoz* (State Farm). The collective farm were composed of *Brigades* which formed the basic crop raising unit. The villages were of arbitrary size and could contain more than one kolkhoz or be contained, with more than one village, in a kolkhoz. Despite attempts to disperse and disrupt traditional social structures, it appears that many structures, especially clan-family, managed to survive. Several studies mentioned in Krader (Krader, 1962, pp. 165-167) describe kolkhoz in which the traditional kinship systems form the basis of organization, activity and leadership within and between the kolkhoz in a district. Furthermore, in the studies quoted by Krader, it appeared that clan affiliation remained strong. Genealogies still formed an important part of the structure, placing each member in their proper place and defining their relationship with other groups. It may be presumed that because of the agrarian nature of the

population, traditional forms remain an important contributor to the national consciousness.¹

I. THE VIRGIN LANDS PROJECT

After the Soviet Union had recovered from World War II the Kazakh were to experience yet another wave of immigration, a wave which would change the very land.

The cultivation of the Virgin Lands, an area of Northern Kazakhstan, had been under discussion since the early 1920's. In 1930, at the 16th Party Congress N.M. Tulaikov reported to the Central Committee:

With wheat we shall go where more valuable crops cannot grow....There are in Kazakhstan from 50 to 55 million hectares² suitable for sowing...it will take approximately 700,000 to 1 million horsepower to bring an additional 20 to 25 million hectares under wheat. (Brezhnev, 1979, p. 35)

Lack of machinery and resources prohibited the project at that time, but the idea was not forgotten.

In 1953 the USSR produced was 31 million metric tons (MMT) of grain, but, 32 MMT were consumed. Impelled by nation wide low agricultural production at

¹The kolkhoz population diminished from 47.5% of the total population in 1939 to 21% in 1959. In 1939 60.8% of the kolkhoz are listed as Kazakh, thus 28.8% of Kazakhs lived in Kolkhoz. In 1939 no breakout is given for sovkhoz, these are lumped in with industrial workers and classified as "blue collar workers," and reported as 33.8% of the total population. Given the state of education for native Kazakhs at this time it would be safe to say that most of the 8.6% of Kazakh blue collar workers were non-industrial sovkhoz. A calculation for 1959 when 40% of kolkhoz are Kazakh indicates that 8.4% of the Kazakh now lived on the collective farms; however, by now Soviet sources broke out sovkhoz separately and statistics for these show that 25.5% of Kazakhs worked on sovkhoz. Hence the proportion of rural Kazakhs remained nearly the same from over 28.8% in 1939 to 33.4% in 1959. (Simon, 1991, p. 394)

²One hectare is equal to 10,000 square meters or 2.471 acre.

rates below prewar, and in some cases below pre-revolution levels, the Virgin Lands project was reopened. Under Nikita Khrushchev's direction, the Central Committee plenum endorsed a wide-ranging program to develop all branches of agriculture; however, this would take time, and time was at a premium. According to Leonid Brezhnev:

Time was to be won with a bold gamble, develop the virgin lands of Kazakhstan, the Altai Territory, Krasnoyarsk Territory, Novosibirsk and the Omsk regions. Land in the Volga country, the Urals and in the Far East was also involved. Land brought under cultivation totaled 42 million hectares, 25 million in Kazakhstan alone. Eighteen million hectares were opened up on the Kazakh steppes between 1954 and 1955. (Brezhnev, 1979, pp. 11-12)

The goals of the Virgin Lands Project as stated by L.I. Brezhnev (Brezhnev, 1979, p. 62) were to:

- Make grain the main form of agriculture in Kazakhstan.
- Increase production ten-fold. (From 5.4 MMT in 1953 to 54 MMT?) (Allworth, 1989, p. 306)
- Radically strengthen the fodder base, ensure a rapid growth in livestock breeding and in the long term at least double livestock products. [From 24.25 million head in 1951 (Allworth, p. 302) to 48.5 million head]
- Preserve and multiply the natural fertility of the soil.
- Set up the country's largest grain growing farms and to reorganize all of Kazakhstan on the same model. [Presumably the intent was to replace the kolkhoz with sovkhoz.]
- Turn all of Northern Kazakhstan into a highly developed economic area.

The hope for a short term success was chosen over the effort of a long term solution. Unable or unwilling to take the steps necessary to raise individual agricultural productivity in lands already under cultivation, the Soviets choose the modern equivalent of "Slash and Burn farming."

"The Kazakhs as a whole," an overwhelming majority according to Brezhnev, "greeted the Party's decision to plow the feather-grass steppes with tremendous enthusiasm and approval." (Brezhnev, 1979, p. 17) Spontaneous approval was probably helped by the 1954 replacement of most of the upper echelons of the Kazakh Communist Party, including Party 1st Secretary Shayakhmentov, who had been appointed during WW II. Numerous cadre were also reassigned. Sometime later, it was mentioned in Soviet publications, that during this time period some unprogressive Kazakhs had suffered from "narrow-mindedness" and had indeed had the temerity to call for a return to the 1920 policy of "Indigenization." In the usual pattern, a Russian, P. Ponomarenko, was appointed as 1st Secretary. Khrushchev also sent L.I. Brezhnev to serve as 2nd Secretary in 1954, and as 1st Secretary 1955-1956. It was at this time that Brezhnev struck up a friendship with the head of the Kazakh Republic Academy of Science, D.A. Kunaev. (Brezhnev, 1979, p. 17) A mining engineer, Kunaev would later become Chairman of the republic's Council of Ministers and a member of the CPSU Central Committee.

1. Virgin Lands Immigration, the Third Wave

Well might the Kazakh leaders call for a return to "Indigenization." Between 1955 and 1962 the third wave of immigration settled 1.2 million non-Kazakhs in the northern oblasts. This influx reduced the Kazakh people to a minority in their own country. In 1959 the Kazakhs constituted 30% of the total population, the Russians and Ukrainians 50.9% and the Volga Germans, who were resettled during the war, 7.1%. (Simon, 1991, p. 382) The ethnic imbalance was

more extreme in the north where the majority of the virgin lands were concentrated. In Tselinograd, Kazakhs were a minority at a ratio of 1:3, in Karaganda 1:5, in Kustanai 2:7, in Northern Kazakhstan the titular nationality became a minority of 19%. (Katz, 1975, p. 223) Apparently little effort was made by the settlers to integrate with the Kazakh society. In 1970, 99% of Kazakh spoke Kazakh as their first language and 41.8% spoke Russian as a second language, more in the areas of slavic concentration. But, out of a total population of 13 million, 8.7 million of which were non-Kazakh, only about 1%, 100,000, managed to speak Kazakh. (Katz, 1975, p. 225)

2. Virgin Lands Project, Success or Failure?

The opening of the virgin lands was indeed a heroic effort. Organized as sovkhoz instead of kolkhoz, the mechanized state farms placed enormous amounts of the steppe under cultivation. Plowed land grew from 9.7 million hectares (24.3 million acres) in 1953 to 27.8 million hectares (69.7 million acres) in 1956. In 1958 28.6 million hectares (71.7 million acres) were under cultivation, of which, 23.2 million hectares (58.1 million acres), were in grain. (Allworth, 1989, p. 305) At first the virgin lands, which had lain fallow for centuries, required little fertilizer. The untouched soil was initially productive, but then, sadly replicating the experiences of the mid-western United States in the years after WW I, production began to decline. From 5.4 MMT in 1953 production of grains rose to 23.5 MMT in 1956 and then started a fitful decline to 22 MMT in 1958, 18.7 MMT in 1960 and 10.6 MMT in the disastrous drought year of 1963. (Allworth, 1989, p. 306) The loosened and

unprotected topsoil was lost to the wind in drought years and caked to concrete-like consistency in wet years. After several easy years of good harvests, the Soviets were back where they had started, faced with the necessity and hard work of improving individual productivity, of simply, becoming good farmers. Slow improvement was made. By the end of the 1980's, production, in good years, had climbed significantly, only to plummet to an estimated 12.5 MMT in 1992. (TASS, 11/19/91, 1214)

By the Soviet's own measures, the Virgin Lands project had failed. Grain and livestock production were well below stated goals. The environment had been severely damaged and the natural fertility of the soil reduced for the foreseeable future. In addition to wheat and corn, the massive settlement of Slavic immigrants had the sown seeds for future ethnic conflicts which may yet effect the stability of Kazakhstan.

J. RECENT HISTORY

During and after the Virgin Lands project the importance of Kazakhstan necessitated a departure from normal Soviet administrative practice in the republics. Usually the republics were administered by a combination of Ministers and a First Secretary of the Party, who were from the titular nationality, and were seconded by reliable Russians as Deputy Ministers and 2nd Secretaries. The 2nd Secretary and Deputy Ministers had the real power, controlling personnel, budgets and funding. A policy of horizontal transfers to other republics was initiated to prevent any local ties and ensure that the Russian apparatus would be loyal and responsive to Moscow alone. This policy was modified during the Virgin Lands Project when Moscow desired more direct control of the Kazakh political process. From 1954 to 1960, both the 1st and 2nd Secretaries, as well as numerous second rank officials, were Russian.

1. The Kunaev Administration

In 1960, D.A. Kunaev, politically astute, reliable and well connected became 1st Secretary, thus reestablishing the usual pattern. Kunaev stepped down in 1962 but was re-elected in 1964, when his old friend L.I. Brezhnev, was chosen as head of the CPSU. Brezhnev would hold that post until his death in 1982, Kunaev would hold his until his "retirement" in 1986. During the Brezhnev years, the republican party elites were extraordinarily stable in their positions of power. Whether through miscalculation, inattention, or simply poor judgment, the republican leaders were allowed to entrench themselves, build local power bases, and most significantly, develop administrations loyal and responsive to the local leadership.

Over these 18 years the republican governments, unnoticed and unregarded, developed a sense of nationalism that even spread to the Russian shadow administration, many of whom were now of local origin.

The Kunaev government was able to develop an effective political machine at the republic level. Reappointed as 1st Secretary in 1964 and elected to the CPSU Politburo in 1971 Kunaev had the time the energy and the ambition to build one of the strongest political machines in the republics. He included both Kazakhs and Russians in his administration. *With influence, patronage and perhaps other, less savory means*, Kunaev gained control of Kazakhstan, not as a Russian proxy, but as 1st Secretary of the Kazakhstan Communist Party.

Upon the death of Brezhnev in 1982 Yuri Andropov became leader of the Soviet Union. Concerned with the stagnant economy, declining productivity, all round inefficiency, graft, corruption and most troubling of all a growing trend towards nationalism in the republics, Andropov initiated a campaign to clean up the republics and restore control. By 1984 all five Central Asian republics had experienced large turnovers of personnel, especially in the state sector. (Hajda, 1990, p. 258) Kunaev was shocked to find himself losing control of his political organization. Liquidation had been replaced by retirement, reassignment and transfer, thus reflecting the original practice of the Central Committee in 1920.

2. The Kolbin Administration

Gorbachev assumed leadership as General Secretary in 1985, and continued the campaign begun by his predecessors. In 1986 Kunaev, despite

denigration and criticism from the Central Committee was elected by a divided party as 1st Party Chairman. He continued in power until December 1986, when he "retired" from the CPSU Politburo, and was replaced as 1st Secretary by G. Kolbin, a Russian with no local ties. The manner of his replacement, as much as the fact, served to enflame Kazakh public opinion and offend a nascent nationalism.

According to Olcott:

On 16 December the Central Committee of the CPK convened to accept Kunaev's request for retirement and then unanimously chose Gennadiy Kolbin, the first secretary of the Ul'yanovsk *obkom*, as his replacement. Nazarbayev (the next 1st Secretary) subsequently reported that the plenum lasted 18 minutes. In a February 1990 interview, he characterized the meeting as "in the worst tradition of stagnation," and he admitted that it led to the serious demoralization of the CPK and the Kazakh people. (Olcott, 1990, p. 65)

The next day, 17 December, thousands, ten thousand by one account, (Nahaylo and Swoboda, p. 255) of Kazakh and Russian youths took to the streets of Alma-Ata for three days of rioting. Reported in official accounts as a few thousand youths doped on liquor and narcotics, the riots were the first serious expression of nationalistic discontent in decades. Information after the fact indicates that there were demonstrations in 12 other regional centers. At least 2191 Komosomol members were disciplined, and additionally 2 deaths and 200 injuries were reported. (Nahaylo and Swoboda, 1990, p. 258)

The demonstrations were viewed with great concern by Soviet leadership. The idea that Soviet educated moslem youth were be in the streets, while Soviet soldiers were in Afghanistan, was inexplicable. These riots could only be explained as the acts of hooligans and drunks, Kunaev's henchmen or worst of all, Moslems in

revolt. It was a measure of the changes in Soviet society that the Alma-Ata riots were reported at all.

Kolbin attempted to mollify the Kazakhs with renewed sensitivity to republican issues. He appointed the "Republican Commission on National Issues." He also declared Kazakh one of the two national languages and announced that he was learning Kazakh himself. Nonetheless, feelings continued to run high and nationalism continued to develop in Kazakhstan.

At the 19th Party congress in June 1988, Gorbachev acknowledged problem areas in the Soviet economy and as part of the solution announced a sweeping reorganization of the Supreme Soviet. Ostensibly this would ensure better representation for nationalities. Portentously, in the debate that followed, the republican leaders clearly championed the extension of republic rights at the expense of central control. Non-Russian delegates were castigated for putting "one-nation patriotism" over "Soviet patriotism." (Nahaylo and Swoboda, 1990, p. 307) However they held firm and the conference resolution on nationalism clearly followed an agenda giving the republics more autonomy. The delegates voted to recognize that "urgent measures" must be taken to ensure:

...the further development and consolidation of the Soviet Federation on the basis of democratic principles. Above all it is a question of the expansion of the rights of the Union republics and autonomous formations through the demarcation of the areas of competence of the USSR and the Soviet republics, decentralization, the transfer to the localities of a number of managerial functions, and the strengthening of independence and of responsibility in the economic sphere, social and cultural development, and environmental protection. (Nahaylo and Swoboda, 1990, p. 308)

Despite acquiescence and professed good intentions the central authority had not completely yielded to republican desires. One month later the republics were shocked to learn that the USSR Supreme Soviet had issued instructions to the Ministry of the Interior to suppress unauthorized meetings and demonstrations. Directed at the Baltics, these decrees inflamed opinion in all the republics. (Nahaylo and Swoboda, 1990, p. 311)

3. The Nazarbayev Administration

In June 1989 rioting broke out in western Kazakhstan, reflecting ethnic strife as unemployed Kazakh youth clashed with settlers from the Northern Caucasus. (Olcott, 1987, p. 72) Consequently G. Kolbin was removed and replaced by Nursultan Nazarbayev. As Prime Minister Nazarbayev had been expected to succeed Kunaev, however these expectations were derailed when Kolbin was sent to Kazakhstan from Moscow. Never-the-less Nazarbayev was able to build substantial political and popular support when he refused to participate in the campaigns to eliminate nationalism and normalize inter-ethnic relations in the wake of the Alma Ata riots. (FBIS-USR, 4/22/92, p. 62) When Kolbin in his turn resigned, Nazarbayev assumed power and soon cemented his position by espousing pragmatic economic and social reforms. He has successfully managed to tread a narrow path between Russian and Kazakh ethnic groups and between old line communists and radical democratic reformers.

A solid, practical leader and skillful politician, Nazarbayev demonstrated his mastery of the art during the crisis over the formation of the Slavic Union.

Russia, Belarus and Ukraine in dissolved the USSR and in effect formed an alliance excluding the Central Asian republics. Nazerbayev held his emotions in check and flew to Moscow to confer with Yeltsin the day before his inauguration as Kazakhstan's first President. The meeting was evidently unsatisfactory and Nazerbayev left commenting that "ignoring a republic such as Kazakhstan and unwarranted emphasis on the 'Slavic factor' constituted a mistake." (FBIS-USR, 4/22/92, p. 63) Shortly thereafter he met with the leaders of four Muslim states in Ashkhabad where they discussed forming an organization of there own. This demonstration of political hardball was successful and Kazakhstan along with other republics was invited to form a new union--the CIS. Nazerbayev has continued his canny game, always supporting the CIS, an integrated military command and inter-ethnic harmony and yet occasionally hinting that Kazakhstan might have nuclear aspirations of its own, establishing independent Kazakhstan armed forces and replacing the oblast governments with Kazakh presidential representatives loyal to himself.

Today Nursultan Nazarbayev finds himself in charge of a very different Kazakhstan than that of any of his predecessors. In 1993 he looks out on a world in which the Soviet Union has ceased to exist. Along the borders of the former USSR five minor wars are in various stages of resolution. The Communist Party has lost all credibility and most of its influence. The economic and political structure as well as the very territorial composition of the Russian Federation is in still in doubt.

Kazakhstan, a backwater of the USSR, has become a de facto nuclear power and taken a step towards center stage in international politics.

In this period of turmoil Kazakhstan must choose wise courses of action which will thread its way through the rocks and shoals of economic chaos, internal dissension, potential ethnic conflict, regional instability and staggering environmental disasters. What courses of action are open and what are their likely effects? Before attempting to answer these we must understand the current state of affairs in Kazakhstan.

III. KAZAKHSTAN TODAY: THE NATION

A. RESOURCES AND THE ECONOMY

Formerly Kazakhstan was a major source of grain for the Soviet Union. However, production fell significantly in 1991 to 11.9 MMT of grain, about 40% of the previous years harvest. (FBIS-USR, 4/22/92, p. 58) (TASS, 11/19/91, 1214) Despite a good grain crop in 1992 the general economic decline continued across all industries through 1992 and into the present (1993). In the first quarter of 1993 Kazakhstan's State committee on statistics reported that national income was down 16.3% and that the agricultural sector was unable to meet the food requirements of Kazakhstan. (RFE-RL Daily, 4/30/93) In part the decline in agricultural production is a result of a drought during the 92-93 growing season. The overall decline in national income is mostly attributed to the difficulties in the transition to a market economy as well as to internal difficulties experienced by Kazakhstan's major trading partner--Russia. It can be expected that as issues of ownership and trading relations sort themselves out the Kazakh economy will recover. This will undoubtedly be helped by an increase in production of oil.

After Russia, Kazakhstan has the greatest mineral wealth of any republic in the former USSR. A major producer of iron, bauxite and non-ferrous metals, Kazakhstan also has substantial petroleum reserves. Oil and gas offer the greatest potential for rapid development and high profits, but Kazakhstan is likely to require

considerable assistance from foreign companies in overcoming the low productivity, caused by years of mismanagement and outmoded technology. In an attempt to update production and fully develop the oil and gas reserves, Kazakhstan has actively sought joint venture programs with free-world countries. The largest of these programs, and in fact one of the largest joint ventures in the former Soviet Union, is an effort with Chevron Overseas Petroleum Corporation (COPI), to develop the Tengiz and adjacent Kovolevskoye oil fields near the Caspian Sea. (The Oil and Gas Journal, 6/25/91, p. 29(3)) After having been stalled by the August coup attempt negotiations were reopened Nazarbayev on Sept 17, 1991. (Houston Post, 9/17/91, p. B 3) When the contract was finally signed 6 April, 1993 Chevron and the government of Kazakhstan had committed themselves to a 40 year joint venture in which each would invest \$10 Billion. Kazakh sources estimate that oil production of this field will stabilize at 36 million metric tons (MMT) per year (production for Kazakhstan as a whole is now 25 MMT/year). Total output is estimated at 900 MMT of oil, 55 MMT of propane and 92 MMT of sulfur. Initially the joint corporation, Tengizchevronoil, will employ about 3200 Kazakhstan nationals. (FBIS-USR, 4/16/93, p. 86) Western sources estimate a production of 700,000 barrels per day by 2010, for a total of 6-9 billion barrels of oil recovered out of 25 billion barrels present. (NYT, 4/7/93, p. C 1) Currently Chevron's world wide production is about 1 million barrels of crude oil per day. In 1992 Kazakhstan also signed contracts with european firms to jointly develop the Karachaganak gas and condensate fields, which

with 35 trillion cubic feet of gas/condensate, are reportedly the largest undeveloped reserves in the world. (The Oil and Gas Journal, 10/28/91, p. 3(2))

In negotiations on the formation of a new political and economic union, Kazakhstan has agreed to accept 3.86% of USSR debit responsibility, about \$2.75 billion. In return Kazakhstan will receive the same percentage of ex-Soviet gold reserves, about 9.36 metric tons, (Killen, 12/4/91, 1446) worth \$110 million dollars.³ Kazakhstan has also agreed to pursue a coordinated tax policy with other members of the economic community that is replacing the Soviet Union. (TASS, 9/23/91, 1003)

As political developments in the former USSR are making themselves felt, the Kazakh economy is adjusting itself to the new world reality. Despite efforts at joint ventures the Kazakh economy is likely to face difficult times ahead. Almost 97% of Kazakh trade was with the former Soviet Union. The republic has very little foreign exchange, and only 27 joint ventures were in operation as of September 1991. (Knight, 9/23/91, p. 45) The out-flow of skilled technicians will degrade Kazakh industry and some industries may vanish altogether. For example, in the beginning of 1991 Kazakhstan voted to close the Semipalatinsk nuclear testing range. Since then, uranium mining, once a major industry in the republic, has been virtually shut down. The mines at Shalgi and Tasbulak are closed. The workers, engineers and technicians have migrated or are seeking other employment. (TASS, 12/2/91, 1037) While this virtual abolition of an industry is an extreme example, the severe cutbacks

³Calculated at an average world gold price of \$366 per oz. troy weight.

in the Soviet space program will affect the launch complex at Baikonur, and will similarly affect the technicians, engineers and support staff who work there.

In summary, Kazakhstan is facing a difficult transition to a market economy; however, it is helped by an abundance of natural resources, which, if given a stable political environment, may be developed in time to provide sufficient capital to stave off the worst of the transition period. Transition will be made more difficult by the almost total reliance on Russia as a trading partner. Because of this "one market system" Kazakhstan is held hostage to the Russian economy. Conversely, chronic Russian shortages of grain and other foodstuffs may increase the value of Kazakh agricultural products. More importantly, after the stabilization of agricultural market relationships Kazakhstan should still be able to feed itself. On the balance, the prospects for a prosperous Kazakh economy are guardedly optimistic--if production is not interrupted by ethnic tension. The resources of Kazakhstan, while not extravagant, are probably sufficient to enable continued growth and modernization.

B. THE ENVIRONMENT

Throughout Kazakhstan, as in the rest of the former Soviet Union, the bill for past policies has come due with a vengeance. The land itself has suffered from reckless and poorly thought out policies. Portions of Kazakhstan near Semipalatinsk are contaminated with radioactive waste from the nuclear test range. In Kazakhstan, as in all of Central Asia, brutal farming practices have reduced the fertility of wide stretches of land, and much of the remaining land has been poisoned by irresponsible use of chemicals and pesticides. In some areas the use of agricultural chemicals,

such as the highly toxic defoliant Butifos, has raised the infant mortality rate from two to three times as high as the national average. (Nahaylo and Swoboda, 1990, p. 268) Pesticides and chemicals are introduced into the water system by runoff from irrigated fields. Eventually many of these pesticides make their way to the Aral Sea with deleterious effects on the populace. In common with Kazakhstan, a province of Uzbekistan, Karakalpakstan, borders on the Aral Sea. Here according to The Economist, "...two thirds of the population suffers from liver disorders, typhoid or cancer of the oesophagus. Infant mortality is among the highest in the world." (The Economist, 11/4/89, p. 23(3)) It can be assumed that Kazakhs, also living on the Aral shore, suffer a similar fate; however, their statistics are diluted in the larger population of Kazakhstan.

The Aral Sea basin may be the world's worst man-made ecological disaster. Before the Amu-Darya and Syr-Darya rivers were diverted to irrigate the Soviet directed cotton monoculture, the Aral Sea was the world's fourth largest body of water. Inefficient methods of irrigation lost almost 40% of the water before it could be used. This, combined with steadily increasing demands for agricultural needs drove the demands on the watershed to its limits. By 1986, the flow of the Syr Darya and Amu Darya rivers was essentially entirely consumed with only 1 cubic kilometer of water reaching the Aral. To remain stable the Aral Sea requires 35 cubic kilometers of water a year. (Micklin, 1991, pp. 14-15) The Aral has now lost 60% of its volume and 50 feet of its depth. The shoreline has receded 60 miles from its 1960 level. (The Economist, 1991, p. 59(1)) The last fish died in 1983. The

dispersion of salty, pesticide contaminated dust, which is blown from the dry lakebed onto the surrounding fields, is an extremely severe problem. Major storms, some with plumes of dust as high as 13,000 ft. and dropping dust 245 miles away, were first seen by Soviet cosmonauts in 1975. (Micklin, 1991, p. 48) "Measurements from 1977 to 1985 indicated that about 43 million metric tons of salt and dust are carried annually from the sea's dried areas..." Other estimates are lower, however, by the year 2000 the Aral Sea is still estimated to be depositing 39 million metric tons of salt and dust on the surrounding fields. (Micklin, 1991, p. 49)

The environment has been altered, the growing season shortened and experts predict that unless a major effort is made, such as diverting rivers flowing to the Arctic to the Aral Sea, the cotton fields will be desert by the end of the century. The sacrifice of the Aral Sea may have been for nothing.

Kazakhstan is fortunate to have sources of water besides the Amu-Darya and Syr-Darya rivers. Other Central Asian republics are not so lucky. Explosive population growth, cotton monoculture, a general reduction in arable land due to primitive farming practices, and salting from poor irrigation techniques will make the distribution of water between the republics the most divisive issue of the next century. Except as a potential supplier Kazakhstan should be uninvolved. With care and commitment Kazakhstan should be able to repair and live with the condition of its environment.

C. POLITICS

Despite, or perhaps because of Russian attempts to clean up the Kunaev party apparatus, the Kazakhstan Political machine has remained relatively intact. While corruption and mismanagement were endemic under Kunaev, the average Kazakh felt that the party was looking after his best interests as well as could be expected. The "Huey Long" of Kazakhstan, Kunaev left a well oiled, smoothly functioning political machine, which would outlast his successor and the Communist party as well.

The collapse of the Soviet Union and the accompanying loss of legitimacy by the Communist Party, enabled the formation of competing political parties. Not as large, well organized or as well funded, they have yet to have a large impact on Kazakhstan political life. Their influence is likely to grow as they address key issues such as economic policy and ethnic rights. The unstable nature of Kazakhstan politics makes any definitive party structure difficult to pin down, however in the Presidential elections of 1991 these parties were participants:

Kazakhstan Socialist Party Renamed from the CPK, the KSP is the largest and best funded of Kazakhstan political parties. Tarned with the failures of the past, the KSP still represents, in many minds, the only party capable of leading the country. Their platform includes support for formation of a "presidential structure from the top down," (FBIS-USR, 4/17/91, p. 81) limited privatization, with the land to belong to the state and be given to citizens for use during their lifetime, economic reform with market determination of prices, creation of a Kazakh currency, (Ljunggren, 11/30/91, 0938) and a policy of ethnic cooperation. The KSP also supports independence, which is interpreted as autonomy within a confederation with Russia. (Ljunggren, 12/2/91, 0634) The KSP has a broad, but perhaps not deep, base of support from all ethnic groups. It can expect to keep this level of support, as long as it is seen as the party which can deliver the goods and manage change successfully. Should this change the KSP can expect to answer for CPK sins.

Republican Party No data yet available.

Independent Trade Union of Entrepreneurs, Lease Holders and Cooperators

No data yet available.

Civil Movement (Azat) Seeks to protect and advance the status of ethnic Kazakhs. Azat supports laws restricting immigration and is pro a slow privatization which would reserve 50% of industry ownership for ethnic Kazakhs. Azat "demands the return of what is their own," and frequently collaborates with the Zhelotoksan (December) party and the Social Democrats. (FBIS-USR, 4/24/92, pp. 79-80)

Unity (Yedinstvo) An inter-ethnic party which has criticized Nazarbayev for neglecting the needs of non-Kazakh inhabitants. (TASS, 11/25/91, 1604) Unity can be expected to remain a critical ally of the KSP for lack of alternatives.

National Democratic Party (Zheltoksan) Headed by Amanzhol Nelabayev and Khossen Munzakhmentov. It was founded from three informal groups interested in promoting ideas and preservation of Kazakh culture. Platform supports development and strengthening of native Kazakh cultures and Kazakh control of the republic. Holds independence as a desirable future goal. (Olcott, 1990, p. 75)

National Independence Party (Alash) Headed by Bulatbek Akhmet-Ali. An Islamic nationalist party which seeks early independence, promotion of Islam, primacy of Kazakh culture and Kazakh control of the republic. Allied with "Turkestan," a group based in Tashkent, which supports the creation of a Central Asian confederation of which Kazakhstan would be a part. Opponents have accused Alash of arming its followers and preparing to use force to achieve political goals. (Olcott, 1990, p. 76)

Kazakhstan Bolshevik Party Based on the All-Union Communist Bolshevik Party (VKP). October 8 1991 statement by the Kazakhstan Organizing Committee, condemned reforms and called for the resignation of Nazarbayev. (TASS, 11/27/91, 1022) Little real support and little real hope for popular support.

Organization for the Autonomy of Eastern Kazakhstan More properly a lobby than a party, the Organization is trying to get the eastern oblasts declared autonomous and exempted from the Kazakhstan language laws. (Olcott, 1990, p. 76) Potential for large support from non-Kazakhs in border regions and transformation into a separatist movement.

On December 1, 1991 Kazakhstan held its first free presidential election.

Where despite a ferment of newly formed parties no one ran against Nazarbayev.

In the best of traditions of machine politics voters were lured to the polls by an abundance of normally scarce supplies such as sausages, vegetables and cigarettes.

In a news conference after the election, Nazarbayev reaffirmed his commitment to the platform of the KSP, and re-emphasized that in his interpretation the people had voted for "independence and not to split the nation...two different things." (Ljunggren, 12/2/91, 0634) Disturbingly Nazarbayev sounded the authoritarian note which his critics have cautioned of, when he warned opposition parties that "Democracy is first and foremost discipline and obeying laws," and that "we have laws on political parties and meetings. If we see these laws are being broken and conflicts started, we will have to take extremely strong measures...." (Ljunggren, 12/2/91, 0634)

D. MILITARY RESOURCES

The National Guard of Kazakhstan by decree of President Nursultan Nazarbayev March 16, 1992. Slightly over one year a navy was similarly established on 2 April, 1993. While on paper the creation of national armed forces is a relatively effortless process, their development into an effective fighting force will be a great deal more difficult. Unlike several of the other new republics Kazakhstan faces a severe shortage of trained officers and Non-Commissioned officers (NCOs).

Both Ukraine and Georgia were able to nationalize troops from the Ministry of the Interior (MVD) and ex-Soviet troops stationed on their soil. The effective control of these troops was made possible by large numbers of Ukrainian and Georgian officers, NCOs and experienced servicemen. In addition to members of

their own nationality, they were assisted by significant numbers of Russian servicemen willing to swear an oath of allegiance to the new republic. Neither of these conditions exist in Kazakhstan. There are not significant numbers of Kazakh officers and NCOs, nor are there very many Kazakh enlisted men in combatant units.

As a matter of convenience and unwritten policy, Central Asians⁴ were not routinely been assigned to front-line combatant units in the Soviet Army. In part, this was due their generally low levels of proficiency in the Russian language. Other contributing factors were ethnic prejudice and some doubts about the political reliability of the "blacks," (as the Central Asians were called). In combatant units, the reported ratio of Slavs to non-Slavs was about 70%; of these Central Asians were reported to compose about 5% of the non-Slavic ethnic groups. Central Asians were much less in evidence in the more highly technical services, the Strategic Rocket Forces, the Air Force and the Navy. (Alexiev and Wimbush, 1988, pp. 143-144) Even when serving in combatant units, Central Asians appeared to receive less training and more assignments to non-combat roles such as cook, manual laborer, and so on.

While non-Slavic representation was low in the combatant units, the ratios reversed themselves in two particular non-combatant areas, the construction battalions (*Stroibat*), and more importantly, the internal security forces, the MVD. Central Asians were reported to have comprised about 50% of *stroibat* and MVD enlisted strength.

⁴Some Soviet literature excludes Kazakhstan from the definition of Central Asia. The more recent usage, which is followed in this study, includes Kazakhstan as a part of Central Asia.

"MVD," (*Ministerstvo Vnutrennykh Del*) refers to troops under command of the USSR Ministry of the Interior. Their primary function was to maintain internal security and order. The majority of the MVD were trained and equipped as mechanized infantry with the addition of some few armor units. (Alexiev and Wimbush, 1982, p. 149)

The vast majority of officers and NCOs in the Soviet army were of Slavic origin. By one estimate there were only 3000 ethnic Kazakh commissioned officers. Fifty of these were Colonels, but none of those were in direct command roles. (FBIS-USR, 5/15/92, p. 89) This lack of trained Kazakh officers and NCOs, as well as the underrepresentation of Kazakhs in combat units and technical services, makes it unlikely that the Kazakhstan National Guard can be brought to a high level of combat effectiveness in the near future. Any Kazakh armed forces would initially be devoid of trained supporting arms, such as artillery, air defense, communications and radio-electronic warfare. Undoubtedly, a period of training and preparation will be necessary before the Kazakh army can become minimally effective. This will more certainly apply to Air Force and Naval units.

Kazakhstan is one of four republics, which in addition to Russia, Belarus and Ukraine have strategic nuclear weapons. About 1250 warheads are in Belarus, a reported 1240 strategic warheads in Ukraine and 1800 warheads in Kazakhstan. (Schmidt, 12/6/91, p. A 7, col. 1) CIS troops in Kazakhstan may also have significant numbers of tactical nuclear weapons available. All three non-Russian republics have emphasized that they do not seek exclusive control of the strategic

nuclear weapons; however, each has demanded a veto over any perspective use. (TASS, 11/30/91, 1005) Ukraine has repeatedly insisted that it desires "comprehensive elimination of all nuclear weapons from its territory in the shortest possible time." (Vasilenko, 11/16/91, p. 19) Ukraine has also repeatedly raised the subject of monetary compensation and security guarantees. (FBIS-USR, 4/5/93, pp. 66-70) Some deputies to parliament have suggested that these guarantees be combined with admittance to NATO or a permanent seat on the U.N. Security Council. (FBIS-USR, 1993, p. 88) Kazakhstan, also raised the issues of national security in the disposition of nuclear weapons. In an interview with ABC on September 16, 1991, Nazarbayev stated: "I am absolutely against having any single republic control all nuclear weapons by itself, irrespective of how large that republic might be." (McManus, 9/17/91, p. A 8, col. 1) This position, clearly referring to Russia, was possibly formed during the August coup, or in light of the Yeltsin administration's frank statements suggesting that under some conditions borders were subject to unilateral revision. (New York Times International, 8/27/91, p. A 7)

IV. THE KAZAKH PEOPLE

A. DEMOGRAPHIC TRENDS

The Kazakh people have been repeatedly driven almost to extinction. They required 75 years to recover from their loss of one third of their population after the Kalmyk invasion of 1723-1725. Later, under the Russians, the Kazakhs endured wave after wave of disasters. It is estimated by the demographer M. Tatimov (FBIS-USR, 1992, pp. 117-119) that during the uprising of 1916 and the ensuing upheavals of Revolution and Civil War, 7-8% of the population migrated and 18-19% died. During the period of Collectivization, Tatimov estimates that an additional 18% migrated and a further 51-52% died. In other words, the population of Kazakhstan was reduced by almost 70%. He notes that the Kazakhs also suffered 350,000 military losses during WW II (by comparison, U.S. losses were 292,000 battle deaths) and that the population of ethnic Kazakhs in 1916 was not matched until 1976, a 60 year recovery rate.⁵

Today, for the first time since Collectivization the Kazakh people have become the largest segment of the population in Kazakhstan. Analysis of demographic and social trends, indicates that this is likely to continue for several reasons, and that the ethnic Kazakhs will gain increased weight as a major factor in the political and

⁵Other sources, such as the excellent work by Robert Conquest, "Harvest of Sorrow," have slightly lower estimates of the overall casualty rate; however, the Kazakhs themselves tend to accept the higher estimates of local demographers.

cultural life of Kazakhstan. First, the rate of natural increase of the Kazakh people is quite large. In data from 1978 the average Russian family consisted of 3.2 members, but the Kazakhs averaged 5.5 members. In the same survey young Russian women expressed a desire for an average of 2.2 children, while young Kazakh women hoped for 4.85. In Kazakhstan between 1979 and 1989, the Kazakh population increased by 23.5%, while the Russian population increased by 3.9%. (Conquest, 1986, pp. 262-264) Second, in addition to the rate of natural increase, a possibility exists for the return migration of large numbers of Kazakhs living in other areas. There could possibly be as many as 1.6 million emigrants from within the Russian Federation, and perhaps an even larger number from across the border in China. Third, there is an increasing rate of departure for non-ethnic Kazakhs.

Data from the 1989 Soviet census, (Hajda and Beissinger, 1990, pp. 262-263) lists the population of Kazakhstan as 16.5 million. In the total population, the ethnic Kazakhs accounted for 6.5 million (39%). The Russians numbered 6.2 million and were 37.5% of the population. The demographer A. Ghaliyev (FBIS-USR, 4/24/93, pp. 81-83) estimated that by 1 Jan 1992, if the effects of migration/emigration were to be disregarded, the proportion of Kazakhs would rise to 41% while the proportion of Russians would remain at about 37%. This was due to reports that while the rate of natural increase for ethnic Kazakhs had remained about the same, the rate of natural increase for Russians, Ukrainians and Belarussians had dropped by nearly 50% from 1989 to 1991. Tatimov also comments on this phenomenon and estimates

that allowing for the return of ethnic Kazakhs from outside the country, by 2002 the Kazakhs will be an absolute majority.

Migration is a serious factor in the demographics of Kazakhstan. Between 1989 and 1991, ethnic Kazakhs were the only group with a positive balance of migrants. Data from Ghaliyev (FBIS-USR, 4/24/93, p. 81), indicates that 57,712 Kazakhs arrived but that 282,719 members of other ethnic groups departed. Despite the overall negative balance of the slavic population growth, in some oblasts the numbers of Russians, Ukrainians and other non-Kazakhs are increasing. In particular, the rich northern tier of oblasts, Qostanay (Kustanay), Kökshetao (Kokchetav), Aqmola (Akmola), North Kazakhstan and Pavlodar have seen an increase of 56,600 from 1989 to 1992. These settlers are arriving from Russia and many newly independent republics where Russians are no longer welcome, including Latvia, Estonia, Georgia, Armenia and Uzbekistan. (FBIS-USR, 4/24/93, p. 81) This increase in the non-Kazakh population of these already heavily slavic oblasts may strengthen the secessionist movements, and in the case of ethnic conflicts, increase the likelihood of conflict between Russia and Kazakhstan.

B. THE WORKPLACE

Kazakhstan as a whole reflects the trends of modernization and urbanization found throughout Central Asia, (Simon, 1991, p. 391) but compared to the rest of the population, the ethnic Kazakh lag behind in urbanization and remain fairly rural.

TABLE I. PERCENTAGE OF URBAN POPULATION TO TOTAL POPULATION IN KAZAKHSTAN

	1926	1939	1959	1979
KSSR	9	28	44	54
Kazakhs	2.2	1.6	24	32

As a whole, the work force shows a consistent trend away from the rural, and towards the industrialized sectors. Table II, extracted from sources quoted in Simon, (Simon, 1991, p. 273 and p. 321) shows this apparent trend. In this data a significant portion of the agricultural work force, the workers on the sovkhoz (mechanized farms), are included as blue collar workers. This is only broken out 1959, where we see that while 50% of the blue collar, industrial, work force is listed as ethnic Kazakh, 44% of these are working in sovkhoz. In the absence of hard data it seems a reasonable supposition that a significant portion of the ethnic Kazakh populace still remains in a rural lifestyle.

TABLE II. DISTRIBUTION OF LABOR IN THE KAZAKHSTAN ECONOMY

	Blue Collar		White Collar		Kolkhoz	
	Total	Kazakh	Total	Kazakh	Total	Kazakh
1939	33.8	25.6	17.4	8	47.5	60.8
1959	58	50	21	16	21	40
1970	65	44/6*		22		13
1979	64			28		8

*In 1959 the titular nationality, the Kazakh, were broken out in the Blue Collar category by sub-categories of workers in the sovkhoz and in industry, in this case 44% and 6%. In subsequent years sovkhoz workers were lumped together with other industrial, blue collar workers. This has the effect of masking a portion of the Kazakh rural workers.

C. EDUCATION

The overall levels of education in Kazakhstan have continued to rise. In general, the non-Kazakh Slavic minorities appear to reflect the levels of education found in Russia as a whole. On the other hand, the Kazakh people have a lower standard of education, but they have also shown significant gains. Statistics available for 1927, 1960 and 1980 show a steady increase in the number of college students, per 10,000 population. College students increased from .3 per 10,000 in 1927, to 112.6 in 1960 and to 237.2 in 1980. (Simon, 1991, p. 406) The number of Kazakhs with a 7 year education was 22 per 1000 in 1939. In 1959 the number of Kazakhs (per 1000 people over 10 years of age) had risen to 282 and in 1970 this number was 403. (Simon, 1991, p. 267) While these levels may seem low by western standards, they represent a triumph for the Soviet system in Central Asia. They have provided Kazakhstan with a populace capable of continuing the development and modernization of Kazakhstan.

D. RELIGION

The currents of Islam in Kazakhstan are uncertain in their course. Permitted but discouraged under Soviet rule, Kazakh Islamic believers are described by Olcott (Hajda and Beissinger, 1990, p. 270) as falling into three categories. First there are "Ethnic Muslims" who are Islamic by birth but not necessarily by practice. They have no real identification with global Islamic movements or with the goals of Islamic states. They would define themselves as "Muslim" because it is perceived as a characteristic of their ethnic group, though it may not necessarily be part of their

individual belief system. Under this definition one could be both an Atheist and a Muslim. Second there are "Cultural Muslims," those who adhere to the practice of Islam without knowledge or understanding of its doctrines. These could be expected to support Islam, at least insofar as it is seen as reflecting a unifying principal for the Kazakh people. In this group there is probably little real sympathy for the goals of Islamic movements and states. However, because of a familiarity with Islam and an association with the clergy, this group may provide a fertile ground for education and conversion to more militant forms of Islam. Lastly there are "Doctrinal Muslims." These are the smallest group but possibly the most vital and with the potential for the most growth. In this group a strong belief system combined with knowledge of Islamic practice and doctrine, reinforces the traditionally proselytizing nature of Islam. New converts and the accession of disaffected Kazakh youth, joined as well by members from the cultural and ethnic Muslims, will probably enlarge this group. They can be expected to have a strong nationalistic agenda and some identification with world Islamic movements.

In an analysis by Yaacov R'oi, there appears to be three main types of Islamic practice in Kazakhstan. These types do not necessarily coincide completely with the three groups defined above, although the congruences are obvious. First and most visible, there is Official Islam. Sanctioned by the Soviet government and served by a formal clergy, official Islam is administered by Directorates set up in Tashkent, Baku, Makhachkala and Ufa in 1943, and in Kazakhstan in 1990. The leaders of official Islam have walked a tightrope between a compromise of belief and

cooperation with the regime. Perhaps somewhat tainted by cooperation with the government, the support received by the leadership has not been excessive. In 1990, a number of mosques were reopened and 15 new mosques were registered bringing the total number of mosques in Kazakhstan to 63. (R'oi, 1990, p. 51) Secondly there is Unofficial Islam; non-establishment and non-orthodox, it is practiced on a personal basis. The lack of mosques in Kazakhstan has resulted in a decentralized practice spread at the grass roots level. This decentralization, combined with a resistance to secularization and a nationalist approach, has strengthened Unofficial Islam much as similar conditions did in the wake of the first Russian conquest. A significant portion of unofficial Islam in kazakhstan has proven receptive to the Sufi branch of Islamic thought. A single sufi brotherhood or *Tariqa*, is a tightly organized group with a rigid hierarchy, usually recruited vertically in one clan. (Simon, 1990, p. 347) This organization of brotherhoods may play a major role in the preservation and strengthening of traditional forms in Kazakh culture. The Sufi influence has been further strengthened by the admission of women to the Tariqas. Sufi preachers have earned credibility and influence with both the youth and the intelligentsia, by their early and consistent opposition to Soviet rule. Lastly there is a large body of religious activity, too vaguely related to Islam to be claimed as formal religion, but termed "folk practices." This is a melange of both Islamic and local cultural practices. While not very important in and of itself, this melange may serve as a springboard for more organized religion.

It appears that Islam, as a central theme in Kazakh culture, serves to unify the Kazakhs and preserve their communal particularism. As one writer noted:

Islamic burial rites and circumcision are widely observed by both believers and non-believers. In fact religious and national identity are inseparable for many Soviet Muslims, and "the repudiation of religion and the old traditions is interpreted as a repudiation of one's nationality." (Karklins, 1986, p. 195)

Currently Islam is not a morally overwhelming force among the Kazakh people. However, Islam may offer the Kazakhs an attractive religious and socially organizing belief system in the tumultuous times ahead.⁶

E. SOCIETY

Despite attacks on Kazakh social patterns during Collectivization and during the subsequent years under Soviet rule, this increasingly urbanized society retains its cultural links to Central Asian kinship patterns. The same patterns discussed in part one, pp. 10-12 and pp. 19-20 persist today. Note the similarity in the situations in 1928 and 1931 to those discussed by Krader in 1949 and 1959:

Asia's Sovietization was frequently only a formality: traditional Islamic and tribal institutions received Soviet labels. The plenum of the Turkmen CC stated in May 1928: "In vast majority of cases, the Party cells in the auls of the raion Merv are groups of aksakals.

The inventory of Central Asia says: "In most cases...the secretaries of the village Soviets were sons of bais, traders and clergymen. (Bennigsen and Wimbush, p. 104) (Simon, 1991, p. 347)

In Kirgizia, one kolkhoz, Kyzyl Oktyabr, Red October, consisted of five villages in 1949. In the settlements, the kinship system is the basis of social

⁶Works by Alexandre Bennigsen and S. Enders Wimbush such as "Muslims of the Soviet Empire" and "Mystics and Commissars" are especially useful in understanding Islam in the former Soviet Union. Also useful is a particularly insightful article by Teresa Rakowska-Harmstone, "Islam and Nationalism: Central Asia and Kazakhstan Under Soviet Rule."

organization. In one settlement 17 families of the Aranzhanlineage live; the Kaiduulat lineage is settled in two villagesThe Kazakh collective farm system and villages are organized along lines which parallel the Kirgiz system. To a certain extent the Kazakh and Kirgiz social systems are the same....Among the present-day Kazakhs, clan-affiliation of each man is known. Not only the old, but boys of 10 or 12 years know their ancestry. They identify themselves by their village as in former times, although the kolkhoz name replaces the aul designation. (Krader, 1962, pp. 165-166)

These are echoed in modern studies by Bennigsen in 1980 also quoted in Simon. (Simon, 1991, p. 316)

Although the tribal loyalties of the former Central Asian nomads have become less pronounced, they have not disappeared. In many cases, the tribes' and clans' feelings of solidarity have joined in a close and "fruitful" symbiosis with the career patterns of Soviet apparatuses. The Islamic peoples' cultural traditions...legitimize the widely prevalent practice of "rope parties," "patron," and "clientele." As a result, members of the Great Horde (*Ulu Iuz*) hold many prominent positions in the Kazakh Party and state apparatus.

The patrilineal kinship patterns of family-tribe-clan appear to have made the transition to the modern world. In 1980, a dissident Soviet writer on internal exile in Yermak, Kazakhstan, noted the competition between ethnic group and the importance of the clan in Kazakh life. (Karklins, 1986, p. 29)

Kazakhstan (at any rate Yermakov region) is riddled with ethnic barriers, although the authorities fail to acknowledge it: they try to appear neutral. Any acquaintance begins with a question about one's nationality, unless this is clear from the color of one's skin or the shape of one's eyes. The support of one's "clan" is considered the ethical basis of life and to violate this is a moral transgression even in the eyes of the passive members of an ethnic community.

In his article "A Time Rich in Hope and Full of Doubt," A. Ghaliyev (FBIS-USR, 4/24/93, pp. 81-83) also commented on the resurgence of clan and even horde (*orda*) groupings.

Starting in 1960, we began to observe isolation by region and by clan or community among Kazakhstan Kazakhs. This tendency was particularly noteworthy during the years 1986-1992. Ethnic interests and likewise local

political structures and an active subjectivism have begun to appear in every clan and community region....More specifically, isolation by horde, region or oblast in the republic is going forward as a matter of necessity.

It appears that privatization and the reorganization of market relationships may have the effect of strengthening the traditional structures. Again from the same source:

While the regionalization of Kazakhstan has been taking place fundamentally within the scope of the three hordes, there is nothing surprising in this. The capitals of the 19 oblasts have connections to classifications into the three hordes. Economic self-management and a cultural infrastructure will come into being in each oblast and likewise within each oblast association.

The patrilineal extended family model, linked by genealogies in the concentric circles of expanding loyalties, is a firm fixture of Kazakh society. If past history is an example, the present upheavals will only serve to strengthen these ties. Paradoxically, this source of strength to the Kazakh people may weaken the Kazakh nation. The same concentric circles of kinship, which enclose and support the Kazakh, exclude and deny the Slavic settlers. The reorganization of political and economic relationships based on horde and clan relationships threatens to completely exclude the non-Kazakh. Unless the settlers, fewer than 1% of which speak Kazakh, can be brought into full participation in Kazakh society, ethnic conflicts are certain to be exacerbated.

F. ETHNIC RELATIONS

Potentially the most severe and explosive problem facing Kazakhstan, ethnic relations may also be the most intractable of solution. The concentration of Slavs in the border oblasts, where Kazakhs are in a distinct minority, and the lack of assimilation by Slavs into Kazakh society and culture, (less than 1% of non-Kazakhs

speaking Kazakh) almost ensure that ethnic relations will be in conflict. Kazakh resentment of Slavic settlers has fueled every revolt since the Tsarist conquest. Were the Slavs to make every effort, which is unlikely, to integrate into the Kazakh nation, acceptance may still be extremely difficult to achieve. Memories from the holocaust of collectivization and lingering resentments from the dispossession of Kazakhs by Russian settlers may prove to be insurmountable obstacles.

What then will happen to the settlers? It cannot be imagined that 6.2 million Russian settlers will return quietly to Russia. Denied acceptance or equal footing in the Kazakh nation, groups such as The Organization for the Autonomy of Eastern Kazakhstan and political action committees in the northern oblasts will become the core of a separatist movement.⁷ It is equally inconceivable that the Kazakhs would peacefully suffer loss of their most fertile border provinces. Conflict and violence seem almost inevitable.

Just as a mutually beneficial trading relationship would serve to draw the Kazakhs and Russians closer, the question of Russian minority rights could serve to divide them. Russia is likely to prove ready to protect and advance the rights of ethnic Russians when it perceives an advantage or moral obligation to do so.

On August 27, the President of Russia issued a warning since publicly retracted. Pavel Voshchanov, speaking for Yeltsin, specifically referred to areas of northern

⁷Alexander Solzhenitsyn in "Rebuilding Russia," translated by Alexis Klimoff, refers to Kazakhstan as "a huge territory that was stitched together in a haphazard fashion: wherever migrating herds made a yearly passage." He offers to let the Kazakhs take their "long-standing ancestral domains along the large arc of lands in the south," and separate with Godspeed. Presumably, the northern portion of the "inflated territory of Kazakhstan" which was "transformed and built up by the Russians" would remain in Russia.

Kazakhstan and the Ukraine, when he declared that Russia reserved the right to review its borders with any republic that left the union:

If these republics enter the union with Russia it is not a problem, but if they go, we must take care of the population that lives there and not forget that these lands were settled by Russians. Russia will hardly agree to give away these territories just like that. (New York Times International, 8/27/91, p. A 7)

Subsequently the statement was clarified, modified and eventually retracted; however, recent events suggests that the original meaning was clear and sincere.

Moldovia accused Soviet troops of occupying areas populated by ethnic Russians and distributing hundreds of weapons to extremists. It was claimed that soldiers of the Soviet 14th Army, "with tacit agreement of the central Soviet authorities were arming separatists," and that "Soviet soldiers are using threats and physical violence on all those who want to take part in the elections." (Reuter Wire, 12/6/91, 1231) Georgia accused Moscow of creating an "artificial" problem in South Ossetia which was blamed on the "imperial policy of Moscow." Russian intervention was blamed for exacerbating the problem and it was claimed that if it were not for the 500,000 Ministry of the Interior (MVD) troops in the area the problems would have been solved in weeks. (TASS, 12/6/91, 1454)

This must give pause to Nazarbayev. Ethnic relations have long been strained in Kazakhstan, from the riots in Novyy Uzen in June of 1989, when unemployed Kazakh youths clashed with Slavic settlers, to more recent incidents in Alma-Ata, where a Russian journalist claimed that, "Russians are getting beaten up on buses just for being Russian." (Ljunggren, 12/30/91, 0938) Despite the best efforts of the

Kazakh government there is not much cause for optimism that ethnic tensions can be kept under control without repressive measures.

V. FOUNDATIONS OF KAZAKHSTAN'S FOREIGN POLICY

In the accomplishment of national interests Kazakh foreign policy must resolve three important relationships. First and foremost, Kazakhstan must resolve its relationship with Russia. Secondly, it must reach some sort of accommodation with China, and lastly it must achieve stability within the framework of relations with the Central Asian republics.

A. FRAMEWORK FOR RUSSIAN-KAZAKH RELATIONS

No discussion of the future of Kazakhstan can proceed without consideration of the final form of the successor to the USSR. Whether it be Federal, Confederate, Commonwealth or complete dissolution, Kazakhstan's relations with the world are determined by its relations with the successor to the Soviet Union. As the animal trainer explained to the ringmaster, "When you start dancing with the bear you can't quit until the bear gets tired." Just so does Kazakhstan also find its boundaries of action circumscribed by the bear.

1. The Soviet Successor State

Three basic possibilities exist for a Soviet successor state. First, there is the possibility that there will be no successor organization. Unable to agree on a form of union, the former USSR may dissolve into the constituent republics, and some unspecified number of former Autonomous Republics. In such a case, formal

relations would be regulated through bilateral agreements dealing with commerce, transportation, defence and other areas of common interest.

Second, there is a possibility that the Commonwealth of Independent States (CIS) will become an effective unifying force. The CIS was proposed by the President of Russia, Boris Yeltsin, in a speech to the Belarus parliament on December 7, 1991. After declaring that "Today we see the failure of the idea of a half-federation, half-confederation," he suggested that Russia and Ukraine were moving towards a compromise based on the Ukrainian proposal for a "commonwealth modeled on the European Community." (Morrison, 12/7/91, 0929) Trilateral talks between Russia, Ukraine and Belarus produced an agreement to form a "Union of Independent States (UIS)," which later became the CIS. The CIS has the stated intent of:

...developing equal and mutually beneficial cooperation of the peoples and states, [in addition] it has been decided to conclude special agreements in the sphere of politics, the economy, culture, education, public health, science, trade, the environment and other fields.

A statement was made pledging respect for the territorial integrity of the states that have signed the agreement, for the inviolability and open nature of existing borders and for freedom of movement. (Reuter Wire, 12/12/91, 1709) Membership in the CIS is open to states that share the same "aims and principles."

The CIS has not yet jelled into an effective organization. Economic policy and tariffs are only partially coordinated between members and perhaps more seriously disagreements have arisen in matters of defense policy. In December 1991 the signatories pledged to preserve "unified command of a common military-strategic

space," and "united control over nuclear weapons." Eighteen months later concrete methods for economic cooperation had yet to be worked out and Russia went on the record reversing it's previous stance concerning the armed forces. At the 13 May 1993 meeting, which was attended by the Defense Ministers of nine of the CIS member states, Russia, in opposition to the other members present, opposed the creation of unified CIS forces in peacetime. Russia also claimed that it was the sole inheritor of nuclear weapons from the former USSR and it opposed CIS command over nuclear forces. Kazakhstan and Ukraine disagreed with these assertions and maintained that the original Minsk agreement, which established CIS control of nuclear weapons, is still valid. (RFE-RL Daily Report, 5/14/93)

The preoccupation of Russia with internal problems has led to a lessening of Russian influence in the southern tier of Central Asian states and encouraged a matching expansion of Turkish and Iranian influence. Not much encouragement was needed. When Russia threatened to blockade the mountainous enclave of Chechen-Ingushetia, Turkey sent \$9 million worth of food through Georgia. (AP Wire, 11/14/91, p. 719) Iran has announced that it will help Azerbaijan build a rail link, through Iranian territory, to the Nakhichevan Republic dependency which is separated from Azerbaijan by Armenia. (TASS, 12/4/91, 0911) On December 5, the Acting Foreign Minister of Kazakhstan, the Personal Envoy of the Azerbaijani President and the Transcaucasian Moslems Spiritual Committee Leader, flew in the Iranian Foreign Ministers personal airplane, to participate as observers at a meeting of Islamic Conference Foreign Ministers. (TASS, 12/5/91, 1002) One commentator

has observed that Iran is "employing the politics of self-interest," because "Teheran is concerned about Ankara's ability to stir trouble through its friends in Azerbaijan and Kazakhstan and fears that Turkish allies in those republics would establish states allied with Turkey." (Zein, 11/1/91, p. 21)

Lastly, there is the chilling possibility of a successful second coup. Rumors are a Russian national pastime; however, when Shevardnadze warns of "nostalgia for a strong hand," and when Mayor Popov of Moscow cautions against an uprising of the "destitute, lumpen section of the population," (Dobbs, 12/6/91) careful observers must take them seriously. The Mayor of St. Petersburg, Anatoly Sobchak, would not rule out a military coup in an interview with *Le Figaro*. He spoke of a "chance of success for a military dictatorship with an aim of simply restoring order." (Reuter Wire, 12/4/91, 0643) An article in the armed forces newspaper, Krasnaya Zvezda, predicted "social cataclysm" if President Yeltsin went ahead with his reforms. "When people reach the limits of their despair, the army--if it has not fallen apart--will say its piece," wrote sociologist Tatyana Koryagina in the same newspaper. (Boulton, 12/4/91, 0946) In November Andrei Zubov predicted in Literaturnaya Gazeta that; "the Soviet Union is most likely in for some form of authoritarian regime in the near future...chances are that it will be a civilian-military bureaucratic government." He speculates that the non-Russian periphery will scatter as it has before, and then hints that this will be followed by re-consolidation under a healthy, powerful, authoritarian center. (Zubov, 11/1/91, pp. 20-22) Indeed, given a winter of hunger, support for a coup might be strong among the population if it

gave hope it could resolve problems of production and distribution. Restoration of central control is a real possibility, at least in Russia proper. As happened in 1917, the individual republics can be expected to assert and attempt to maintain their independence, especially in the face of a renewed bureaucratic dictatorship.

Regardless of the final form of the successor to the USSR Kazakhstan must still, first and foremost come to terms with Russia. Kazakhstan can exist in one of two basic forms of relationship with Russia--in some form of close alliance, with integrated economies and reasonably open borders; or as an entity totally separate from Russia, perhaps as a member of some other alliance system, with closed borders and bilateral, formal relations.

2. Kazakhstan In A Close Relationship With Russia

As a nation in close alliance with Russia (perhaps as a member of the CIS, or secure in some form of bilateral agreement) most of Kazakhstan's security concerns which do not involve Russia would disappear; but Kazakhstan might still have substantial concerns concerning Russia itself. Just as occurred in 1922, a renewed Russian imperialism could turn any close relationship into a deadly embrace. Therefore, a prudent republic would maintain some "reasonable sufficiency" of defensive forces for its own protection. In addition to this, Russian security concerns would also become concerns for Kazakhstan. Strategic weapons placed in Kazakhstan for reasons of Russian security are targets for all that.

Internal problems might be alleviated by a close relationship with Russia. Concerns over trade, communications and transportation could be better resolved.

Fears of the ethnic Russians might be allayed by a Kazakh-Russian alliance; however, this same alliance might exacerbate the fears of native Kazakhs. Freedom of movement between Russia and Kazakhstan or within the CIS might be seen as a license for unrestricted immigration. Special agreements respecting the rights of Russians in education and culture might be seen as unacceptably damaging to the re-assertion of the Kazakh culture. On the other hand a close relationship with Russia might give the government of Kazakhstan a free hand in dealing with unrest among the Russian minority.

If reason were to prevail, Kazakhs could logically expect that their own improved education and economic prospects, combined with their high birth rate, would serve, with time, to fulfill their ethnic ambitions; however, other minority groups may see these objective facts as threatening developments which demand some sort of resolution.

3. Kazakhstan In A Non-Cooperative Relationship With Russia

As a separate, non-cooperating nation, Kazakhstan may find its internal problems aggravated. Aside from the difficulties associated with the resolution of various economic issues and the status of nuclear weapons, relationships between the two nations might be strained by ethnic problems internal to Kazakhstan. In the steady stream of immigration to the north one already sees evidence of "a last lifeboat on the Titanic" syndrome among the Russian settlers. Official figures indicate that between 1989 and 1991 about 58,000 Kazakhs returned to Kazakhstan while almost 282,000 non-Kazakhs. Additionally some 57,000 Russians and

Ukrainians relocated to the northern border oblasts, increasing the already heavy preponderance of non-Kazakhs. In the event of severe ethnic strife, almost unavoidably the settlers would attempt to take the border oblasts, where Russians are in a majority, out of Kazakhstan, and into Russia, joining with the neighboring Russian oblasts. These are some of the richer areas in Kazakhstan. The Kazakh government would have to be very persuasive, to reassure the settlers, or very careful in its use of force to resolve the issue. It may be doubted, that the Kazakh government could act effectively without providing excuses that would allow, or reasons that would compel, Russian military intervention. In the case of total separation, the degree of compromise forced on Kazakhstan will be a function of the perceived strength of the Kazakh armed forces, versus the value of voluntary Kazakh cooperation. The value of cooperation may be limited. Since Russia is assured, that in the foreseeable future, Kazakhstan will need Russia as a trading partner, and since the seceding oblasts would, in any case, provide Russia with benefits. In this case Kazakhstan's voluntary cooperation might not have much value. As a separate, non-cooperating nation, Kazakhstan, or Kazakhstan in alliance with others, must be prepared to resist Russia, by force if necessary.

As a nation in an unfriendly relationship with Russia, Kazakhstan would also face the difficult task of creating a stable Sino-Kazakh relationship, a task which would have been made easier by an alliance with Russia.

Sinkiang province, properly the Sinkiang-Uighur Autonomous Region, shares a common border with Kazakhstan. Home of the Chinese nuclear complex

and weapons testing center, Sinkiang is also rich in mineral resources, but dryer and less fertile than Kazakhstan. The population is approximately one third Chinese and two thirds mixed Kazakh and Uighur. Many of the Kazakhs are settlers who fled Kazakhstan during the collectivization of the 1930's. In the early 1960s, tensions escalated on the border in response to a general worsening in Sino-Soviet relationships. Until this time neither side had seen much strategic value in the area, however troop clashes and Chinese claims to 20,000 square miles of Kazakhstan escalated the issue. Between 1965 and 1969 Soviet troop strength increased from 18 divisions to 36 divisions on the border in Kazakhstan. (Katz, 1975, p. 222) Tensions subsided somewhat with the signing of the Sino-Soviet border agreement on May 16, 1989; (Dobbs, 5/17/91, p. A 21) but this agreement did not resolve the claims on the Sino-Kazakh border. Kazakhstan must be attentive to these claims and troubled by certain expansionist tendencies of the Chinese state. It should be concerned by the traditional Chinese desire for stable, subordinate border states, a desire which might be encouraged by the benefits, both strategic and mineral, the inclusion of Kazakhstan would bring to the Chinese nation.

Kazakhstan, may also find it difficult to avoid becoming embroiled in Central Asian conflicts. The struggle for influence between Turkey and Iran in Central Asia is likely to continue. Combined with ethnic disputes, possible religious conflicts and competition for resources, water being primary, and Kazakhstan is faced with a difficult situation along it's southern border.

There is, of course the possibility of Kazakh entry into an alliance with either China, some or all of the Central Asian republics, or perhaps some other outside power. However, few powers with resources sufficient to help Kazakhstan provide for its security and develop its economy also have significant interests in Central Asia. All things considered Russia looks more attractive than China, Iran, Turkey or any of the other local nations.

An alliance with Russia, combined with a reasonable sufficiency in defensive capabilities appears to be an attractive course of action for Kazakhstan. It resolves most of the Kazakh security concerns, it secures access to markets and a transportation infrastructure unavailable elsewhere, and it alleviates ethnic tensions. If it is acceptable to the Kazakh people, it is probably the best accommodation that can be made for Kazakh national aspirations.

But an alliance with Russia may be unacceptable for several reasons. It is conceivable that Russia could turn again to Tsarist and Soviet expansionist policies. Even as an ally Kazakhstan must fear another wave of Slavic immigration, and it is doubtful if the environment itself could withstand a return to the exploitation of the last 100 years. It is also conceivable that, even if Russian policy is acceptable, public sentiment would not allow a close relationship with Russia. Memories run long in this part of the world. Past wrongs, combined with resurgent Islam, might make it impossible for Kazakhstan to act in an alliance with Slavic states.

B. SCENARIOS FOR RUSSIAN-KAZAKH CONFLICT

As much as rational statesmen on both sides of the border might wish to avoid it; several scenarios suggest themselves which might lead to confrontation between Kazakhstan and Russia.

1. Scenario 1: Revenge

The Kazakhs, having suffered so much for so long at Russian hands could conceivably harbor a thirst for revenge. Vengeance based policies, which lay aside rational calculations of costs and benefits, are currently in fashion in much of the world. The Balkans immediately come to mind as a notable and tragic example. However, when it comes to nuclear weapons and materials it is difficult to see how any Kazakh administration could believe that any use against Russia could have any but the most suicidal consequences. If Kazakhstan were to adopt this policy, it would be necessary to do the Russian nation as much harm as quickly as possible in anticipation of a counterstrike. Quite probably targets of particular cultural or emotional value would be chosen. Fortunately, the Kazakh have shown little inclination towards this non-productive behavior. Perhaps a calculated analysis has shown that they would gain little satisfaction and much more pain. Unless triggered by some Russian provocation, this scenario is considered the least probable.

2. Scenario 2: Islamic Fundamentalism

In the wake of independence, Islam has emerged as a stronger force in Kazakh life than was previously thought to be likely. As an Islamic nation, Kazakhstan can be expected to be under pressure to export nuclear technology,

material and perhaps weapons to the Muslim world. As yet Islamic fundamentalists are not a strong force in Kazakh politics however their political positions are growing in popularity. Representatives of the extremist Islamic parties are generally tied to political platforms which support fellow moslems against the oppression of the "Godless. In practice this usually means members of the local ethnic group against slavic immigrants, former communists in power or any other non-moslem in opposition. This has led the leadership of the Zheltoksan party to call for volunteers to defend the Azerbaijani Muslims in Nagorno-Karabakh against Armenia. (RFE-RL, 5/11/92) Furthermore, the party leadership has stated that if the government will not assist the party in this cause, the members will raise their own funds to support their fellow muslims. Russia is already unofficially involved on the Armenian side. Recently five Russian soldiers were sentenced to death by the Azerbaijani supreme court for their part in battles in Nagorno-Karabakh. (DPA, 5/12/93, 1408) The course of action demanded by Zheltoksan would put Kazakhstan in direct opposition to Russia, an ally of Armenia (and Kazakhstan) in the CIS. In neighboring Uzbekistan the president, Islam Karimov, vowed to prevent the establishment of Islamic fundamentalism. The Uzbek president is concerned that the bloody civil war in Tajikistan, between the former communists in charge of the government and the Islamic fundamentalists members of the Islamic Revival Party (RPP), might spread to Uzbekistan. (Kynge, 3/4/92, 0942) Both Russian and Kazakh troops are involved with Uzbek forces in assisting the Tajik government. As yet, the extremists seem to be in a distinct minority. With so many problems of there own it may be difficult for

the majority of Kazakhs to develop a commitment to Islamic extremist causes. Certainly, the current government does not reflect these views; however, given time, the Islamic extremists might combine Kazakh nationalism and Islamic fundamentalism to become a potent force in Kazakh politics. A political alliance to the extremist parties of the Islamic world could result in numerous difficulties not only for Russia but for the west as well. For instance, there would be enormous pressure on Kazakhstan (and considerable temptation) to export nuclear technology and perhaps nuclear material to co-religionists. Nursultan Nazarbayev has already been repeatedly forced to deny exportation of nuclear weapons to Iran. (FBIS-SOV, 1/28/92, p. 4) and (JPRS-TND, 10/21/92, p. 28) Were violations of non-proliferation objectives to occur they are likely to occur covertly, perhaps on an individual to individual basis and perhaps accompanied by significant transfers of funds.

3. Scenario 3: Russian Intervention

Ethnic relations are potentially the most severe, explosive and intractable problem facing Kazakhstan. The disparity of wealth and the concentration of Slavs in the border oblasts, where Kazakhs are in a distinct minority, coupled with the lack of assimilation by Slavs into Kazakh society, almost ensures that ethnic groups will be in conflict. Kazakh resentment of Slavic settlers has fueled every revolt since the Tsarist conquest. Were the Slavs to make every effort, which is unlikely, to integrate into the Kazakh nation, acceptance might still be tenuous. The clan-family structure of society combined with memories from the holocaust of collectivization and the

lingering resentments from the dispossession of Kazakhs by Russian settlers may prove to be insurmountable obstacles. As Machiavelli advised the Prince: "above all he must abstain from taking the property of others, for men forget more easily the death of their father than the loss of their patrimony." (Machiavelli, 1952, p. 90) This was wise advice, but completely disregarded by the Russian conquerors.

What then will happen to the settlers? It cannot be imagined that 6.2 million Russian settlers will return quietly to Russia. If they are denied acceptance on equal footing in the Kazakh nation, succession becomes a desirable option. Groups such as The Organization for the Autonomy of Eastern Kazakhstan and political action committees in the northern oblasts have already become the core of a separatist movement. (Olcott, 1990, p. 76) The Kazakh media has expressed considerable concern over this issue and it is practically inconceivable that the Kazakhs would peacefully endure the loss of their most fertile provinces. Conflict and violence seem almost inevitable. (FBIS, 7/20/92, p. 93) and (FBIS, 9/4/92, p. 86) It is not difficult to imagine situations in which ethnic Russians, dissatisfied with their treatment in Kazakhstan, would attempt to secede and join with Russia. Any active, effective secessionist movement is almost sure to call forth repressive measures from the Kazakh government. Russia, on the other hand, is likely to prove ready to protect and advance the rights of ethnic Russians when it perceives an advantage or moral obligation to do so. The protection of ethnic Russians is an enduring and popular political stance in Russia and one which crosses party lines. It is doubtful if any Russian government could abandon 6 million ethnic Russians to

their fate and remain in power. Thus, two nuclear powers could come into direct conflict for the first time in history.

PART II, AN ANALYSIS OF POLICY

VI. INTRODUCTION

In a confrontation with the Russian Federation many options are available to the Kazakh leadership. In this section we will attempt to develop a methodology for evaluation of various courses of action, and then test the methodology by applying it to an evaluation potential Kazakh policies.

VII. A THEORY FOR EVALUATION OF DETERRENT STRATEGIES

Deterrent strategies are unique in that their objective is the prevention of conflict rather than victory. As a class they seek to persuade rather than compel. While strategies in general seek to accomplish specific goals, the objective for a deterrent strategy is to persuade the opponent not to attempt to realize some objective. Hence, deterrence only exists in the mind of the opponent. Since a rational opponent makes decisions based on costs, benefits and their probabilities of attainment, it is appropriate to consider costs and benefits first.

A. COSTS AND BENEFITS

The calculus of rational deterrence suggests that for deterrence to hold, the value, or utility, of peaceful actions must be greater than the value of warfare. In the general case values of costs and benefits may vary over time and are expressed as:

$$V(t) = B(t) - C_1(t) - C_2(t)$$

Where V is the value gained from a course of action and $V(t)$ is a function of time, and where $B(t)$ is defined as the benefits of a course of action, $C_1(t)$ is defined as one's own cost to pursue that course of action and $C_2(t)$ is the cost or pain caused by any opposition to that course of action. $C_1(t)$ is under the control of the actor and $C_2(t)$ is under control of the opposition.

In the specific case of nuclear war, violence is concentrated in a short span of time, and in this case the values above may be assumed to be constant. This would

not be true for cases of conventional warfare or other cases where warfare would continue long enough for the values to vary with time.

Consider two sides, A and B and assume that A is the aggressor and B seeks to deter A. If the perceived benefits and costs of aggression and resistance/defense, are expressed as:

B_A : The benefit to the aggressor from his act.

C_{A1} : Where C_{A1} equals the cost of aggression, as expended by the aggressor. It includes not only system costs for aggressive systems, but opportunity costs, costs for active and passive defenses and the cost of systems which would respond to the defenders counter-strike(s). C_{A1} is the sum of expenditures by the aggressor.

C_{A2} : represents the pain of aggression as extracted from the aggressor by the defender.

B_B : The benefit to the defender from his resistance.

C_B : Where C_{B1} equals the cost of the defense, as spent by the defender. It includes his active and passive defenses as well as the cost of his retaliatory systems.

C_{B2} : represents the pain of resisting. It is caused to the defender by the aggressor.

Then a deterrent condition, for a rational actor, can be expressed as:

$$V(t)_{(PEACE)} \geq V(t)_{(WAR)}$$

This can be expressed side A as:

$$B_{A(PEACE)} - C_{A1(PEACE)} \geq B_{A(WAR)} - C_{A1(WAR)} - C_{A2} \quad (1)$$

Side A must consider whether the benefits obtained in peace, $B_{A(PEACE)}$, less his own costs in peace, $C_{A1(PEACE)}$, are greater than benefits obtained by war, $B_{A(WAR)}$, his own

costs in war, $C_{A1(WAR)}$, and the pain of war, C_{A2} . Interestingly enough the real, objective values of these coefficients are not important. It is perceived, or subjective values, which influence an actor's response. If B seeks to deter A then B must persuade A that the above inequality holds. If the benefits of peace, $B_{A(PEACE)}$, is not large enough or if A's own costs ($C_{A1(PEACE)}$) are too high, then the deterring party must seek to affect A's perception of the right side of the inequality.

With this thought, rational deterrence may be assumed to have been established when the inequality of equation 1 is believed to exist along with three other conditions:

- The deterrent threat must be perceived as executable; or expressed another way, the threat by the defender to extract cause the pain of C_{A2} must be perceived as physically executable.
- The deterrent threat must be credible. The aggressor must believe that the defender will cause the pain of C_{A2} , even in light of the pain, C_{B2} , he will suffer for resisting.
- The aggressor must have a contingent strategy; that is to say, there must be another, more acceptable option for the aggressor than paying the cost $C_{A1(WAR)} + C_{A2}$ for gain $B_{A(WAR)}$.

The defender has, as his tools to deter aggression, his ability to affect the coefficients of equation 1. He may follow any number of strategies as shown in the following examples.

First, the defender might alter the value of $B_{A(WAR)}$ by reducing the intrinsic value of the aggressors goal. A scorched earth policy would be such a strategy if it were employed only as a strategy of denying benefits to the aggressor. Second, the defender might increase the cost of aggression which is spent by the aggressor,

$C_{A1(WAR)}$, by constructing retaliatory systems which drive up the costs of both aggressive systems and any active or passive defenses constructed by a potential aggressor to minimize C_{A2} , the pain of aggression. The development of the MIRV as a second strike weapon is an example of this. The defender can also drive up costs of $C_{A1(WAR)}$ by constructing defenses which increase the cost of offensive systems. The proposal to field SDI is a somewhat weak example of this. Although promoted as a system which would decrease the pain C_{B2} which the aggressor could extract from the defender if he resisted, the major effect of this system would be to protect second strike systems and thus increase the cost C_{A2} which the defender could extract from the aggressor. In this the American side saw an increase in deterrent power. The Soviet side argued that in reality the purpose of these systems was to protect aggressive systems, thus increasing the Soviet pain of resisting aggression, C_{B2} . Several Soviet scientists also made the argument that it was not worth while for the United States to deploy SDI, because with a relatively small increase in countermeasures (a small increase in Soviet $C_{A1(PEACE)}$) they could drive the U.S. costs of defense, $C_{B1(PEACE)}$, beyond the U.S. capacity to pay. (Freedman, 1989, pp. 414-415) and (Yost, 1988, pp. 201-209)

The aggressor, in constructing active or passive defenses may be thought of as attempting to reduce the pain, C_{A2} , which the defender can cause, and thus reverse the inequality of eqn. 1 and make aggression pay. In this manner, as we saw above, the construction of defenses can be considered as an aggressive act. Of course were the defender to construct those same defenses he could see himself as trying to

reduce the pain of resistance, C_{B2} , which the aggressor could force him to pay. In a situation when each regards the other as the aggressor and himself as the defender, there is no natural stability until the costs begin to approach the limits of fiscal capacity.

When there is a question of credibility the defender may increase the value of defending a goal against an aggressor's actions by increasing the value of a specific goal to the defender. This has the effect of increasing the value of $B_{B(WAR)}$ and increasing the defenders incentive to fight for the goal. This might be done by increasing the subjective value of the goal with a public commitment to its defense; such as is seen in the policy of "extended deterrence," or it may be done by increasing the intrinsic value of the goal itself. For instance, the establishment of settlements in disputed territory would increase the intrinsic value of the territory to the defender (both physical and psychological) and hence make it more likely that it would be defended. This brings out the point that there are two components to the coefficient, B . There is a component which expresses the objective, physical value of the goal, and also a component which expresses the subjective, psychological value.

Even when there is not a question of executability or credibility there is a probabilistic nature to the likelihood of benefits and costs. A defender may have every intent in extracting cost C_{A2} from an aggressor, but his systems may not function. On the other hand a defender may have excellent systems, but his will may be weak. The concept of Irrationality Based Deterrence as developed by Edward Rhodes (Rhodes, 1989) relies on this probabilistic nature. It proposes the creation

of systems to extend deterrence to objectives which have a value ($B_{B(war)}$) too low to rationally warrant a nuclear response, by creating systems in which the defender has some probability of extracting the cost C_{A2} from the aggressor, even though if he does so, the cost C_{B2} , extracted by the aggressor from the defender may be cataclysmically high and approach infinity.

B. EXPECTED UTILITY OF STRATEGIC OPTIONS

The probabilistic nature of costs and benefits makes it necessary incorporate probability into our analysis in order to evaluate the expected utility of various strategies.

The expected utility of an outcome is defined as the sum of the values of individual events multiplied by the probabilities of their occurrence. If there are several events, event 1, event 2 etc. then the equation takes this form.

$$E(U) = v_1 * p_1 + v_2 * p_2 + \dots \quad (3)$$

Here;

$E(U)$ = expected utility of a course of action.

v = value, positive, or negative of a event

p = probability of occurrence⁸

The expected utility of a strategy is the sum of the expected utility of all events which comprise the strategy.

⁸As with $V(t)$ probabilities may vary with time; however, in the case of nuclear war the same assumptions hold and here probability is assumed to be invariant with time.

$$E(U_{tot}) = \sum E(u_i) \quad (4)$$

In considering political/military strategies, an event is defined by the status of two sub-events; the achievement of the goals chosen and the occurrence of war. In this analysis we will consider the value of the goal which is achieved to be the net value of the benefits of a particular strategy, i.e., $V = B - C_1 - C_2$. The cost or pain of warfare, a negative value is defined C_2 . The pain of warfare, C_2 , is the pain or cost inflicted by the enemy. In confrontations between the Soviet Union and the United States, when C_2 was assumed to be an all-out nuclear war, the value of C_2 was assumed to approach infinity, a catastrophe. But; even in this case, goals were not limited to the avoidance of catastrophe but included other elements. Goals may be met or not met. Likewise a warfare may or may not occur. These events are represented as:

\underline{g} = goals met
 \overline{g} = goals arn't met
 \underline{w} = warfare occurs
 \overline{w} = warfare doesn't occur

The two states of the two sub-events combine to give four possible joint events:

$g \cap \bar{w} = \text{Goals are met; no war occurs.}$
 $g \cap w = \text{Goals are met; war occurs.}$
 $\bar{g} \cap \bar{w} = \text{No goals are met but no war occurs.}$
 $\bar{g} \cap w = \text{No goals are met; war occurs.}$

In the case where war is assumed to equal catastrophe it could be argued that the probability of achieving the goal is the inverse of the probability of a catastrophe and that from this the sub-events are mutually exclusive.

$$P_{\text{ca}} = 1 - P_g$$

This may be disproved by counter-example. Consider the case of an actor motivated by vengeance, whose only goal is the destruction of another actor. In this case the goal is included in the catastrophe and the catastrophe and goal are not mutually exclusive. This is an important point. The goals of real-world strategies cannot be defined solely in terms of deterrence (avoidance of catastrophe). If this were so the simplest and most effective deterrent strategy would be complete and immediate surrender.

The four joint events each have a value and a probability of occurrence. Their sum is the expected utility of a strategy.

$$E(U) = V_{(g \cap \bar{w})} P_{(g \cap \bar{w})} + V_{(g \cap w)} P_{(g \cap w)} + V_{(\bar{g} \cap \bar{w})} P_{(\bar{g} \cap \bar{w})} + V_{(\bar{g} \cap w)} P_{(\bar{g} \cap w)} \quad (3)$$

1. Case I, Dependent Events

It is necessary to consider the sub-events of gain and warfare as both statistically dependent and independent events. If events are dependent the occurrence of one affects the probability of the other. In this case:

$$P(g \cap w) \neq P_g P_w$$

$$P(g | w) = \frac{P(g \cap w)}{P_w}$$

and the conditional probability of g given w is:

Using the definition of conditional probability eqn. 3 becomes:

$$E(U) = V_{g \cap \bar{w}} (P_{g|\bar{w}} P_{\bar{w}}) + V_{\bar{g} \cap \bar{w}} (P_{\bar{g}|\bar{w}} P_{\bar{w}}) + V_{g \cap w} (P_{g|w} P_w) + V_{\bar{g} \cap w} (P_{\bar{g}|w} P_w) \quad (4)$$

$$P_{\bar{w}} = 1 - P_w$$

Since:

$$E(U) = V_{g \cap \bar{w}} P_{g|\bar{w}} + V_{\bar{g} \cap \bar{w}} P_{\bar{g}|\bar{w}} + P_w [V_{g \cap w} P_{g|w} + V_{\bar{g} \cap w} P_{\bar{g}|w} - V_{g \cap \bar{w}} P_{g|\bar{w}} - V_{\bar{g} \cap \bar{w}} P_{\bar{g}|\bar{w}}] \quad (5)$$

Ignoring for a moment the question of who is the aggressor and who is the defender the values of the four joint events defined above are:

$$\begin{aligned}
V_{g \cap w} &= B_{(WAR)} - C_{1(WAR)} - C_2, \quad \text{gain with war} \\
V_{g \cap \bar{w}} &= B_{(PEACE)} - C_{1(PEACE)}, \quad \text{gain without war} \\
V_{\bar{g} \cap w} &= -C_{1(WAR)} - C_2, \quad \text{no gain in war} \\
V_{\bar{g} \cap \bar{w}} &= -C_{1(PEACE)}, \quad \text{neither gain nor war}
\end{aligned}$$

Note that $B_{(WAR)}$ does not equal $B_{(PEACE)}$ nor does $C_{1(WAR)}$ equal $C_{1(PEACE)}$.

Substituting these in eqn. 5 leads to:

$$\begin{aligned}
E(U) &= B_{(PEACE)} P_{g|\bar{w}} - C_{1(PEACE)} P_{g|\bar{w}} - C_{1(PEACE)} P_{\bar{g}|\bar{w}} \\
&\quad + P_w [B_{(WAR)} P_{g|w} - C_{1(WAR)} P_{g|w} - C_2 P_{g|w} - C_{1(WAR)} P_{\bar{g}|w} \\
&\quad - C_2 P_{\bar{g}|w} - B_{(PEACE)} P_{g|\bar{w}} + C_{1(PEACE)} P_{g|w} + C_{1(PEACE)} P_{\bar{g}|\bar{w}}] \\
E(U) &= B_{(PEACE)} P_{g|\bar{w}} - C_{1(PEACE)} + P_w (B_{(WAR)} P_{g|w} - C_{1(WAR)} - C_2 \\
&\quad - B_{(PEACE)} P_{g|\bar{w}} + C_{1(PEACE)}) \quad (6)
\end{aligned}$$

since:

$$B_{(PEACE)} P_{g|\bar{w}} - B_{(PEACE)} P_{g|\bar{w}} P_w = B_{(PEACE)} P_{g|\bar{w}} P_{\bar{w}} = B_{(PEACE)} P_{(g \cap \bar{w})}$$

and

$$P_w C_{1(PEACE)} - C_{1(PEACE)} = -C_{1(PEACE)} P_w$$

eqn. 6 becomes:

$$E(U) = B_{(PEACE)} P_{(g \cap \bar{w})} + B_{(WAR)} P_{(g \cap w)} - C_{1(PEACE)} P_{\bar{w}} - P_w (C_{1(WAR)} + C_2) \quad (7)$$

$$B_{(PEACE)} P_{(g \cap \bar{w})} - C_{1(PEACE)} P_{\bar{w}} \geq B_{(WAR)} P_{(g \cap w)} - P_w (C_{1(WAR)} + C_2)$$

Deterrence is established when;

and from the definition of conditional probability this may be expressed as:

$$P_{\bar{w}} (B_{(PEACE)} P_{g|\bar{w}} - C_1 (PEACE)) > P_w (B_{(WAR)} P_{g|w} - C_1 (WAR) - C_2) \quad (8)$$

2. Case II, Independent Case

If gain and war are statistically independent then the knowledge that one event has occurred gives no information about the probability of the second event. The conditional probability of g given w is the unconditional probability of g . Events are independent if:

$$P_{(g \cap w)} = P_g P_w$$

and if they are independent the conditional probability of g given w is equal to:

$$P_{(g|w)} = P_g$$

Now considering the case of statistical independence and using this assumption and the identity:

$$P_{\bar{w}} = 1 - P_w$$

and after some expansion and combination of terms eqn. 3 may be expressed as:

$$E(U) = P_g (V_{(g \cap \bar{w})} - V_{(\bar{g} \cap \bar{w})}) + P_w (V_{(g \cap w)} - V_{(\bar{g} \cap w)}) + P_g P_w (V_{(g \cap w)} - V_{(g \cap \bar{w})} - V_{(\bar{g} \cap w)} + V_{(\bar{g} \cap \bar{w})}) + V_{\bar{g} \cap \bar{w}} \quad (9)$$

Substituting the values for the joint events as above in eqn. 9 yields eqn. 10 for the case where $B_{(WAR)}$ does not equal $B_{(PEACE)}$ and $C_1 (WAR)$ does not equal $C_1 (PEACE)$.⁹

$$E(U) = P_g (B_{(PEACE)}) + P_w [C_1 (PEACE) - C_1 (WAR) - C_2] + P_g P_w (B_{(WAR)} - B_{(PEACE)}) - C_1 (PEACE) \quad (10)$$

⁹ Complete proofs for the dependent and independent cases are contained in Appendix 1.

C. EVALUATION OF DETERRENT STRATEGIES

Equations 7 and 10 may now be used to evaluate deterrent strategies in the dependent and independent cases. The dependent case will generally prove to be more useful for the concrete problems at hand. In the case of two rational actors P_g and P_w are not independent; that is to say, in the real world the probability of achieving a goal is somehow related to the probability of war. We also find that the benefits of peace are different in kind and quantity from the benefits of war and in addition the self-expenditure C_1 is different in war than in peace; hence, $C_{1(war)}$ is not equal to $C_{1(peace)}$ and $B_{(war)}$ is not equal to $B_{(peace)}$.

Therefore it is appropriate to use equation 7 and the inequality of equation 8.

$$E(U) = B_{(PEACE)}P_{(g \cap w)} + B_{(WAR)}P_{(g \cap w)} - C_{1(PEACE)}P_w - P_w(C_{1(WAR)} + C_2) \quad (7)$$

$$P_w(B_{(peace)}P_{g|w} - C_{1(PEACE)}) > P_w(B_{(WAR)}P_{g|w} - C_{1(WAR)} - C_2) \quad (8)$$

Evaluation of the inequality of equation 8 may be either quantitative or qualitative. Quantitative techniques exist which might be used to estimate the values of the coefficients in eqn. 8; however, the current state of the art is unable to resolve large uncertainty errors and some inherent inaccuracies. The confident employment of quantitative techniques awaits further developments in the art.

Qualitative techniques, while in a sense less satisfying, yield useful results in most cases. Diverse fields such as Sociology, Psychiatry and Jurisprudence generally find the use of qualitative estimation techniques satisfactory. The concept of the "reasonable man" is used in Jurisprudence where it is presumed that we may

understand the actions of the plaintiff or defendant if we posit that he acts as a reasonable man would act in his circumstances. Adapting the theory of "the reasonable man" to evaluate eqn. 8 suggests that it is possible to understand the relative, subjective value another actor would place on the coefficients of eqn. 8 if we understand; first, the value structure of this actor, and second, the combined motivations and societal/cultural constraints on his actions.

This implies, that in evaluating Kazakhstan's strategic options, we will be accurate and correct only insofar as we understand the Kazakhs themselves; their culture, their society, their value structures and their history.

As is our estimation of the values of the coefficients, it is of equal importance that we understand how to vary those factors. If side B is to establish or maintain deterrence by manipulating the inequality of eqn. 8 then we must understand how this is to be accomplished. In the final analysis actor B seeks to change actors A's subjective valuation of the coefficients of the deterrent inequality, eqn.8. He may do this in a purely subjective manner through policy initiatives, psychological warfare, misdirection or some other non-material technique. B may also seek to change A's valuation through objective, material means; but of course these will have no effect unless A is aware of them and can alter his subjective valuations based on new objective factors. The movie "Dr. Strangelove" demonstrates this point when the "Doomsday Machine" constructed by the Soviet Union had no deterrent effect on the United States, which was unaware of it.

If side B desires to establish or strengthen deterrence he must increase the value of peace, the left side of eqn. 8, or decrease the value of war on the right side of the equation. Let us examine some of B's potential courses of action with regard to the various coefficients.

$P_{\bar{w}}$ The probability of peace

B may decrease the probability of war by allying himself with A, or by establishing informal friendly ties. B may attempt to develop friendly relationships between the populace or between members of the ruling classes.

$B_{(peace)}$ Benefits of peace

B may increase the material benefits of peace to A by establishing profitable trading relationships. In earlier times B might have paid tribute, a physical benefit. B must take care when developing his material wealth as this may also increase the benefits of war, $B_{(war)}$. There is a danger in becoming too rich. B might also increase the benefits of peace to A by establishing a supportive alliance which would decrease the self induced costs, C_1 , A may be forced to pay with respect to another actor C. B may increase the subjective benefits of peace to A by propaganda, cultural exchange programs or other psychological efforts.

$P_{g|\bar{w}}$ The probability that A will obtain his goal, given that there is peace

The increased benefits of peace are of little value to A, if A has little chance of realizing these benefits. B may not find it necessary to increase $B_{(PEACE)}$ if he can increase the probability that A will receive some lower level of values. In order to do this, B may establish formal trading relationships, commercial treaties or a "Most Favored Nation" status. In former times the probability of tribute actually being paid was increased by the exchange of hostages. A more modern example is seen in the occupation of the Rhineland by Allied powers after World War I. In part this was done to ensure that war reparations would be paid on time and in full.

$C_1(PEACE)$ Self Induced Costs in Peace

B may make peace more attractive by reducing A's self induced costs through arms control negotiations, or by refraining from acquiring offensive systems.

P_w Probability of War

Side B may attempt to reduce the probability of war; however this is difficult to do independently of other factors. P_w depends of the evaluation of other factors by side A, the potential aggressor and on the will of side B. Side B can increase the probability of war, in this case the probability that B will fight by the construction of automatic response systems or systems with fragile command and control. Rhodes proposes this in his theory of irrationality-based deterrence (Rhodes, 1989).

$B_{(WAR)}$ Benefits of war

B may reduce the benefits of war by ensuring that A will receive no material benefits from aggression. In the recent Gulf War had the government of Kuwait been able to establish a credible threat to destroy their oil fields it might have gone far towards removing the incentives for aggression. Obviously it is difficult to establish credibility for this policy of denial, and in addition one is faced with the difficulty that the aggression may not be motivated solely by material motives. Denial of material gain may not be enough to deter aggression. Kuwait might have been able to deter aggression by establishing alliances with another actor, side C. By increasing the value of Kuwait at peace, ($B_{(PEACE)}$) to side C, Kuwait would put the new side (C+B) in a deterring relationship to side A. The fact that Kuwait was able to do this even after having failed to deter war says much about the value of peace, $B_{(PEACE)}$ to the other players.

$P_{s|w}$ Probability of Success Given War

The probability that A will achieve his goals given that there is war. This may not be victory in the conventional sense. This is the probability that A will attain the benefits of war, objective or subjective. B can affect this value directly by expenditures $C_{1(PEACE)}$.

$C_{1(WAR)}$ Self-induced Costs of War

B may increase the costs of $C_{1(WAR)}$ to A by several means. For instance, B may construct extensive defensive systems or B may use propaganda, psychological

warfare or political means to raise the political price A must pay for war. Referring back to P_w , B may increase the probability that will have to pay $C_{1(WAR)}$ by increasing the probability that B will resist aggression. This reduces the chance that if side A chooses war and side B would choose peace (surrender without a fight). A's payoff in this case would be $B_{(WAR)} - C_{1(WAR)}$, and $C_{1(WAR)}$ would be lower than $C_{1(WAR)}$.

C_2 Pain of War, the costs of war caused by the opposition

B may enhance deterrence by increasing C_2 , beyond A's desire to pay. If the pain of war is extreme the probability of war, i.e., the probability that B will fight, need not be high. Conversely, if C_2 is low P_w must be high and if C_2 is too low the certainty that B will fight, might not be sufficient to deter war.

D. EXPECTED PAYOFF MATRIX FOR KAZAKHSTAN VERSUS RUSSIA

In analysis of policy options for Kazakhstan, it will be useful to construct a matrix of the expected payoffs in the case of Kazakhstan versus Russia. In the matrix of Figure 1 the columns represent Kazakh expected payoffs for the choices of war or peace. Similarly the rows represent the Russian expected payoffs. These payoffs are calculated from eqn. 7 for the expected utility of strategic options in the dependent case. The extreme (highest and lowest) values of eqn. 7 are calculated in order to bound the problem. In order to do this we assume that when one player or the other chooses peace, P_w equals 0. Likewise when a player chooses war, P_w equals 1. A rational player will attempt to make the selection which will yield him the highest payoff, and will also attempt to persuade the other player to make choices which will

allow him this payoff. Unlike classic game theory, in which the only choice to be made involves which strategy or mixture of strategies which is to be played in order to optimize your own return; here the players are allowed to attempt to optimize their payoff by affecting the payoffs of the opponent.¹⁰

From Figure 1 it can be seen that the optimal policy for Kazakhstan is to drive Russia to choose peace. This is not necessarily the highest Russian payoff. Under our assumptions that payoff is probably when Russia chooses war and Kazakhstan chooses peace (surrender); therefore Kazakhstan must persuade Russia that this option will not be chosen by Kazakhstan. It is still possible that peace will not offer the highest payoff to the Russians. Material rewards combined with political rewards, may make the benefits of war higher for Russia than the benefits of peace. This could occur in the case of ethnic turmoil in Kazakhstan which creates internal political pressures in Russia. To avoid this situation Kazakhstan must ensure that the benefits of peace to Russia are higher than the benefits of war. All Kazakh policy must be directed to this end.

¹⁰Because we are now dealing with both Russia and Kazakhstan it is necessary to introduce a refinement to our notation and append an "r" or "k" as is appropriate.

MATRIX OF EXPECTED PAYOFFS

KAZAKHSTAN			
		PEACE $P_{W}=0$	WAR $P_{W}=1$
PEACE $P_{W}=0$		$B_K(PEACE)P_{G W} - C_{K_1}(PEACE)$	$B_K(WAR)P_{G W} - C_{K_1}(WAR) - C_{K_2}$ $C_{K_2} = 0$
RUSSIA		$B_R(PEACE)P_{G W} - C_{R_1}(PEACE)$	$B_R(PEACE) - P_{G W} - C_{R_1}(PEACE)$
		$B_K(PEACE)P_{G W} - C_{K_1}(PEACE)$	$B_K(WAR) - P_{G W} - C_{K_1}(WAR) - C_{K_2}$
WAR $P_{W}=1$		$B_R(WAR)P_{G W} - C_{R_1}(WAR)$ $C_{R_2} = 0$	$B_R(WAR) - P_{G W} - C_{R_1}(WAR) - C_{R_2}$

E. SUMMARY

This concludes the preliminary development of a method for the evaluation of deterrent options. This section developed a statement for the expected utility of deterrent options, and then used this statement to express an inequality which describes the condition of deterrence. Future work in this area should include an analysis of the effects of values which vary over time as well as the treatment of the probabilities as stochastic processes, a family of random variables which vary over time. It may also be useful to develop refinements in the techniques for quantitative estimation of the coefficients of these equations. The matrix of expected payoffs in Figure 1 and the inequality of equation 8 can now be used in the analysis of deterrent options open to Kazakhstan.

VIII. POTENTIAL COURSES OF ACTION FOR KAZAKHSTAN

A. INTRODUCTION

The Chinese character for crisis combines the characters for danger and opportunity. It aptly describes Kazakhstan today. In the analysis of Part I we have gained some appreciation of the problems facing the new Republic of Kazakhstan.

Having barely survived two and one half centuries of Russian rule the Kazakh have suddenly found themselves masters of an new nation. They possess considerable agricultural and mineral resources and have the opportunity to mature into a wealthy and influential state. Unfortunately, along with independence the Kazakhstan inherited an impressive list of problems. Kazakhstan fell heir to some of the worst environmental problems in the world: areas contaminated by radiation, areas contaminated with chemicals and pesticides, and soils on the verge of destruction by poor farming practices. Kazakhstan has also acquired serious ethnic problems, caused by centuries of colonization, and potentially serious social problems caused by resurgent Islamic traditionalism. Regardless of the seriousness of these problems, one problem remains paramount, as it has throughout Kazakh history: Kazakhstan's relationship with Russia. Three potential scenarios for Kazakh-Russian conflict were discussed in Part I; a Kazakhstan attack on Russia from motives of revenge, an Islamic Fundamentalist government in Kazakhstan and ethnic conflict in Kazakhstan which causes Russian intervention. These were listed in order of

increasing likelihood. It is entirely unlikely that a Kazakh desire for revenge would lead them into a suicidal attack on Russia. It is only slightly less unlikely that the rise of an Islamic Fundamentalist government in Kazakhstan could lead to hostile relations with Russia. However, it is entirely possible that already strained ethnic relations between ethnic Kazakhs and Slavic settlers could boil over into the sort of open warfare which would impel Russian intervention. The leaders of Kazakhstan will have to be exceptionally cautious and wise in order to maintain Kazakhstan's independence and a cordial relationship with Russia. In order to accomplish this what sort of options are available to the Kazakhstan government?

B. INEFFECTIVE OPTIONS

Not all the options suggested by eqn. 8 are available or would be effective for Kazakhstan. First, Kazakhstan will have difficulty in affecting the Russian expenditure, $Cr_1(PEACE)$, self-induced costs. Russia has many security concerns more pressing than Kazakhstan. These concerns are of such a magnitude that Russian expenditures are already quite high and it is unlikely that Kazakh actions could drive it much higher. Second, the size and efficiency of the Russian armed forces, in comparison to any reasonable forces Kazakhstan might develop, make it unlikely that Kazakhstan could increase the Russian costs of war, $Cr_1(WAR)$. In other words, potential Russian expenditures during a war might be lowered from their current levels by Kazakh actions, but it is unlikely that they could be raised appreciably. Third, as discussed in Part I, Kazakhstan has a difficult task ahead of it in the creation of effective armed forces. This implies that in the near future, Kazakhstan

by itself will be unable to affect the conditional probability of a Russian victory given war, $P_{(G|W)}$. Given the above assumptions, at least with respect to Russia, Kazakh military expenditures need not be large.

C. CORDIAL RELATIONS

Since Kazakhstan can have little effect on $Cr_{1(PEACE)}$, $Cr_{1(WAR)}$ or $P_{(G|W)}$, inspection of the payoff matrix and eqn. 8 suggests that Kazakhstan might successfully deter Russian aggression by establishing cordial relations and increasing $Br_{(PEACE)}$, the benefits of peace and $P_{(G|D)}$, the probability of receiving the benefits of peace. In order to increase $P_{(G|D)}$, Kazakhstan might promote commerce through formal treaties, selective tariffs and favorable legislation. Cultural exchange programs might also be of some use; however, inter-ethnic hostility within Kazakhstan, combined with the general low regard of many Russians for Central Asians, will present difficulties on the inter-personal level. Never-the-less formal relationships between governments can still increase $P_{(G|D)}$.

The benefits of peace which Kazakhstan can offer are substantial and range from the production of grain and other foodstuff, to access to considerable mineral wealth and a key strategic position buffering Russia from the poorer, more radical Islamic states to the south. Unfortunately as Kazakhstan increases the material value of $Br_{(PEACE)}$ it is also increasing the material advantages which would be available to Russia after a victorious war. Since the probability of Russia achieving its goals in a war with Kazakhstan, $P_{(G|W)}$, is high, then the material benefits of peace are

almost equal to those of war--unless Kazakhstan can find a way to reduce the benefits of war.

Kazakhstan could adopt a policy of denial and develop plans to destroy the mines and the oil fields, and to contaminate the Virgin Lands. However, as was discussed above it is difficult to establish credibility for such a policy and there are additional reasons to doubt that it is executable. It is not clear how to go about destroying oil reserves, nor is it clear that the slavic population of the Virgin Lands would stand by while the land was poisoned. With respect to $Br_{(PEACE)}$ Kazakhstan is on the horns of a dilemma. An increase in the material benefits of peace may also increase the benefits of war. Since Kazakhstan is unable to affect the probability of Russian success given war, $P_{(G|W)}$, it must concentrate on increasing the Russian probability of receiving the benefits of peace, $P_{(G|P)}$.

D. ALLIANCES

Kazakhstan must consider and allow for the eventuality that Russia may find the probability of benefits from peace too low or the benefits of war too high to resist war with Kazakhstan. In this case having been unable to affect $Cr_{1(PEACE)}$, $Cr_{1(WAR)}$ or $P_{(G|W)}$ and having failed in attempts to increase $Br_{(PEACE)}$, the benefits of peace and $P_{(G|P)}$, the probability of receiving those benefits to acceptable levels, Kazakhstan is left with few options. One option remains before Kazakhstan must attempt to effect deterrence by increasing C_2 , the pain of war. By entering into an alliance with a third party Kazakhstan can increase the value of peace to the third party. In this case the payoff matrix must be recalculated for the

case of Russia versus Kazakhstan + Ally, and the new side may be able to affect the self induced costs of war or peace or the probability of a Russian victory.

Without time to develop conventional strength, Kazakhstan could seek support in a system of alliances. Major regional powers that may have an interest in Kazakhstan are Turkey, Iran, China and India.

India offers a well trained and well equipped army, nuclear capability and a military industrial complex. On the negative side India has difficult relations with numerous Islamic countries. This may make an alliance difficult from the aspect of Kazakh internal politics. India also considers Russia a major trading partner, and before the collapse of the Soviet Union received 15% of its military goods from Russia. Russia and India also have a common interest in restraining China. Were Kazakhstan to find itself in opposition to Russia it might not find India a reliable ally.

A Kazakh-Turkish or Kazakh-Iranian alliance might provide firm and reliable support; however, neither can provide much in the way of conventional forces capable of defeating the Russians.

China, assuming it is not itself reduced to impotence by internal dissension, has much to offer as an ally. China brings to the table a large, somewhat well trained, and fairly well equipped army, the possibility of counter pressure at other areas along the Sino-Russian border, and a nuclear capability. Unfortunately, China may also have territorial ambitions. There is no evidence that life under Chinese suzerainty would be any better than the former life as a member of the USSR.

Existing in the midst of a multi-polar power struggle, Kazakhstan has the potential to broker influence in a "balance of power" scenario. However, it is doubtful if this would be successful for very long, especially if treatment of ethnic Russians were to inhibit Kazakhstan's ability to claim Russia as an ally against China. A likely outcome of Kazakhstan's attempt to balance Russia, India and China in competition, would be Russia and India in opposition to Kazakhstan and China. While Russia might accept a neutral Kazakhstan (if not impelled to intervene by other reasons) it would certainly be compelled to intervene by the prospect of a Chinese Kazakhstan. An attempt to form a close alliance with China could be hazardous for Kazakhstan.

E. SECURITY GUARANTIES AND EXTENDED DETERRENCE

If Kazakhstan becomes a non-nuclear nation and finds itself in opposition to Russia, the question of "extended deterrence" may arise. China as well as India, and perhaps Pakistan in the future, have the capability of attempting to extend nuclear deterrence to Kazakhstan. The policy of "Extended Deterrence," as applied by the United States to Europe, considers an attack on Europe as an attack on the United States. This is declared credible on the basis that Europe represents a vital interest to the United States. Despite the undisputed importance of Europe to the United States, the credibility of this policy was not easy to establish with the Russians or even with the Europeans.

Kazakhstan does not represent a vital interest to any other state, except perhaps Russia. Extended deterrence such as Western Europe has enjoyed is thus denied to

Kazakhstan. No nuclear power could credibly threaten to attack Russia for aggression in Kazakhstan, knowing that it might receive total devastation in return. On the other hand, it is not impossible that an outside power could offer a credible commitment to fight a nuclear war confined to Kazakhstan. In such a case it seems unlikely that Russia, fearing a retaliation on its own soil, would choose to extend the war beyond Kazakh borders. Of course this is small comfort to Nazarbayev. This is an especially unattractive option considering that the hypothetical Kazakh allies would be conducting counter-force operations against Russian units while both counter-force and counter-value targets would be available to the Russians.

Examination of the various nations in Central Asia suggest that a useful alliance structure is unavailable to Kazakhstan. The question then arises as to the viability of any form of deterrence for Kazakhstan.

IX. KAZAKH OPTIONS FOR DETERRENCE

Having exhausted the other possibilities, deterrence for Kazakhstan means increasing the expected pain of war in order to reverse the inequality of eqn. 8 and make peace more desirable than war. In order to do this kazakhstan must not only increase Cr_2 the Russian pain of war, but must also increase $P_{w,r}$, the probability of war, in this case the probability that Kazakhstan will fight, extracting the cost Cr_2 , inflicting the pain of war.

A. DETERRENCE WITH CONVENTIONAL FORCES

If Kazakhstan embarks on courses of action likely to provoke Russian intervention or if Russia seems intent on reabsorption, then Kazakhstan must be prepared to resist by force of arms.

Even if the most modern equipment were available, technicians to maintain it and soldiers to operate it are not. As a conservative estimate, given several years to acquire modern equipment, five years to train acceptable noncommissioned officers, another five years to develop a capable officer corps, and Kazakhstan is faced with at least ten years, before it can field any army capable of meeting the Russians on an open battlefield, and in Kazakhstan, all the battlefields are open. Lacking the prescience to provide itself with Afghan mountains or Vietnamese jungles, Kazakhstan finds the option of guerrilla war severely limited and must seek to provide itself with other alternatives.

B. DETERRENCE WITH NUCLEAR FORCES

Kazakhstan cannot hope to defeat Russian intervention with force. It possesses no conventional military capable of overcoming Russian forces and no allies willing provide such forces or extend nuclear or conventional deterrence. There is no clear U.S. policy regarding this situation. Any Kazakh strategic use of nuclear weapons on Russian soil would be suicidal and the use of tactical nuclear weapons against Russians on Kazakh soil seems counterproductive--and might invoke a Russian strategic nuclear response.

If Kazakhstan deems Russian intervention likely, and chooses to resist, it must develop a deterrent strategy based on internal resources. This strategy must be capable of deterring both nuclear and conventional forces and must be executable by Kazakhstan. For a deterrent strategy to work, the deterrent must be feasible, credible and effective. Given that Kazakhstan cannot construct a conventional force capable of deterring Russian conventional forces, then Kazakhstan must rely on nuclear weapons to deter both nuclear and conventional forces.

1. High Technology Deterent Forces

A modern, missile based nuclear strike capability is the most credible and effective deterrent Kazakhstan could acquire. Such a credible and effective a "hi-tech" force exists in Kazakhstan today. It consists of the nearly 1,800 nuclear warheads of the SS-18 ICBM force and would certainly be capable of extracting a very high value for Cr₂ from Russia. Currently this force is unavailable to Kazakhstan. Even were the Kazakhs to seize control of these missiles, perhaps with

the assistance of Russian turncoats, it is difficult to see how Kazakhstan could acquire the technical knowledge necessary to bypass security interlock systems, reprogram target parameters, and then operate and maintain these complex systems for any length of time. In fact, any attempt to take control of these systems is likely to be dangerous in the extreme. This does not appear to be a feasible deterrent force for Kazakhstan.

2. Low Technology Deterrent Forces

It might be possible for Kazakhstan to acquire control of some limited number of warheads and develop a "low-tech" delivery system and deterrent force. While feasible to develop, the low-tech system, because of its limited numbers and the relatively long warning-to-launch times would be vulnerable to a pre-emptive strike. This limits its utility. With limited weapons, poor delivery systems, and facing stiff defenses, Kazakhstan will have difficulty convincing Russia that any Low-Tech system it develops could be effective.

3. The Doomsday Weapon

Given that Kazakhstan cannot develop conventional forces sufficient to deter the Russians, cannot acquire a hi-tech nuclear deterrent force and that low-tech forces are ineffective, there seems to be only one active deterrent option open to Kazakhstan, the creation of a regional terror weapon--a local doomsday machine. If such a weapon existed, it might deter Russian aggression; that is, if the Russians were convinced that it was feasible to build, effective in its employment, and that the Kazakhs could be expected to use it.

It is entirely feasible to configure a nuclear weapon to enhance production of long- term radio-nuclides and then target areas at altitudes which maximize the effects of fallout. There is little doubt that this would be effective as an area weapon. A weapon could be designed which would poison entire rivers and deny large areas to human habitation for centuries if not millennia.

The consequences to Kazakhstan would be severe. Ck_2 would approach infinity. The victim could be expected to respond with instant and massive retaliation. The world would condemn the perpetrators and demand punishment of the survivors. This being the case it would be difficult for Kazakhstan to establish a credible belief that use of this weapon is probable or even possible. Without credibility there is no deterrence, in our parlance P_{wk} the probability that Kazakhstan would fight is too low.

4. Establishing Credibility for a Doomsday Weapon

There are only two cases in which Kazakh threats could be believed. The first is a circumstance in which Kazakhstan can be seen as having nothing more to loose. If the Kazakh were defeated and on the verge of annihilation, the use of this weapon becomes very credible. It would be a wise policy for any aggressor would take care to ensure that the Kazakhs never reached this position. A terror weapon might preserve Kazakhstan from total annihilation. Paradoxically, this weapon is of use only to deter total destruction. Even in the case of unlimited conventional aggression, the Kazakh government could not establish that they might creditably use this weapon unless they had reason to fear the total destruction of the Kazakh people

at the hands of conventional forces. Of course, given the history of their treatment at the hands of the Russians, this fear might not be as hard establish as one would suppose. It would be difficult if not impossible to establish a credible threat to rationally use this weapon in the face of an aggression of announced limited objectives--such as "protecting oppressed fellow Slavs."

In the second case, if there is a possibility that aggression might trigger irrational actions by Kazakhstan, then the threat is very credible and deterrence may be established. Two scenarios appear possible. In the first scenario, Russian provocations might cause the Kazakhs to transition to a strategy of revenge and, abandoning rational calculations of cost and benefit, concentrate on causing as much pain as possible to their tormentors. In the second scenario, the Kazakh could simply loose control of their deterrent forces.

In consideration of the first scenario, a rational aggressor will do all in his power to avoid triggering a "vendetta response" from nuclear power. The defending nation also should go to great lengths to avoid leading the opponent to believe that they are preparing to engage in a strategy of revenge. Revenge, being a non-rational motive, is not amenable to rational deterrence. When an actor has reason to believe that an opposing actor is motivated by revenge, he can assume that deterrence has failed and that he should now concentrate on pre-emptive attack. Both actors should take all steps to avoid a situation where one side is motivated by a desire for revenge.

In the second instance Kazakhstan may be able to establish credibility and hence deterrence by constructing a deterrent force in which rationality could fail during war. This increases $P_{w,r}$. If this deterrent force is reasonably secure from preemption, then aggression is deterred. Of course, Kazakhstan must convince opposing actors that rationality and control will hold until the force is under attack. Otherwise there is strong motive for a preemptive attack.

In summary, Kazakhstan has limited options available to preserve its independence. It may attempt to increase its value to Russia in peace. It may attempt to establish alliances which would increase Russia's reluctance to interfere in Kazakhstan, and it may develop weapons which would cause the Russians to avoid any possibility of their use.

X. GOALS OF AMERICAN FOREIGN POLICY

It is in the interest of the United States to deter the use of nuclear weapons and the export of nuclear material or technology for military purposes. With respect to Kazakhstan, this is the first and most important goal of American foreign policy. (Reuters Wire, 5/23/92, 1905) Ideally the United States would prefer a Kazakhstan completely free of nuclear weapons, materials and technology, but the achievement of these goals is hindered by Kazakh national interests--which are supported by the retention of a "nuclear insurance policy." If Kazakhstan is to eliminate its nuclear capability, then these national interests must be satisfied in some other manner other than by a nuclear capability.

There are apparently three primary goals in Kazakh foreign policy. First, it seeks to ensure the flow of aid and investment necessary to fuel Kazakh economic growth. Second, the government of Kazakhstan desires a respected position in the world community, and most importantly, Kazakhstan seeks to prevent the development of forces or circumstances which would threaten Kazakh national integrity. All other factors being equal, the possession of a nuclear capability serves all three of these goals. As a nuclear power, Kazakhstan may be perceived as more capable of guaranteeing its security. A secure Kazakhstan is more attractive to outside investment dollars. A secure Kazakhstan with a healthy, growing economy would be

assured of respect and a place in the "new world order," and Kazakhstan with a doomsday weapon would not fear a Russian version of "ethnic cleansing."

In order to persuade Kazakhstan to relinquish its nuclear capabilities, the United States will have to convince Kazakhstan that its national interests could be better served by embracing a non-nuclear status. Current U.S. policy in this regard centers around economic incentives. In the "Joint U.S.-Kazakhstan Declaration" of 25 May, 1992, (US Dept. of State Dispatch, 5/25/92, p. 402(5)) both nations "resolved to develop friendly, cooperative relations," and announced their support for "early ratification and implementation of the START (Strategic Arms Reduction Treaty)." It was announced that:

Kazakhstan shall at the earliest possible time, accede to the treaty on the Non-Proliferation of Nuclear Weapons as a non-nuclear state while preserving the right of control over the non-use and reductions of the nuclear weapons temporarily deployed on its territory. Kazakhstan guarantees to carry out the elimination of all types of nuclear weapons, including strategic offensive arms, within the 7-year period provided for in the START Treaty.

In return the United States agreed to support various technical assistance programs and to assist Kazakhstan in the development of a market economy. The U.S. will conclude:

- A trade agreement that will confer most-favored-nation tariff treatment on Kazakhstan.
- An OPIC (Overseas Private Investment Corporation) agreement that will make available investment insurance for American firms operating in Kazakhstan.
- A bilateral investment treaty.

The United States is attempting to increase the benefits of peace to Kazakhstan in order to persuade Kazakhstan to relinquish nuclear weapons, which would increase the pain of war to the Russians and indirectly to the United States. The force of these economic arguments is such that the U.S. will probably prevail, at least with respect to Kazakhstan's public policy. However, it is not clear how increasing $Bk_{(PEACE)}$ for Kazakhstan with regard to the United States will address Kazakhstan's security concerns vis-a-vis the Russians. Kazakhstan's request for security guaranties from the U.S. has been denied (Washington Post, 5/9/92, p. A 16)¹¹ and Russian pledges to assist ethnic Russians in need (NYTI, 8/27/91, p.A 7) cannot increase Kazakhstan's confidence in the future--regardless of present cordial relations with Russia. While the persuasive American economic arguments may have their desired effects on the public policy of Kazakhstan; the hard calculus of deterrence may influence the Kazakhs to retain an "ace-in-the-hole," the Doomsday Machine. ~~The~~ are concrete steps the United States might pursue in order to alter this calculus.

First, the U.S. can reduce $Br_{(WAR)}$. In order to do this the U.S. must address the subjective, political factors which might compel Russian intervention. The most urgent and important of these is the resolution of ethnic conflict. Unfortunately this is not an area in which the U.S., or the rest of the world has had much success.

¹¹In response to a Kazakh request for "special security guarantees" State Department spokesman, Margaret Tutwiler responded that the United States "had not considered any new security assurances to Kazakhstan." (Washington Post, 1992, p. A 16) Ms. Tutwiler went on to say, however, that the United States stood by its 1968 commitment to seek immediate (but unspecified) action by the U.N. Security Council in case of aggression or threats against non-nuclear signers of the Non-Proliferation Treaty (NPT). This vague assurance may have left Kazakhstan somewhat insecure.

Rather than attempting to resolve these rather intractable issues, it may be more effective to separate the parties in conflict. In order to do this the U.S. might:

- Contribute to the international (CIS) "Russionik" migration fund, which is being used to assist Kazakhstan Russians migrating from Russia. (FBIS-USR, 4/24/93, p. 83)
- Encourage an exchange of territory; or perhaps help finance Russian acquisition of some of the territory primarily occupied by ethnic Russians.

In order to increase the intangible benefits of peace to the ethnic Kazakhs, the U.S. might:

- Support economic specifically aimed at improving the economic status of the ethnic Kazakhs.
- Encourage joint Kazakhstan-Russian projects which would raise the value of peace to both sides.

In order to reduce the values on the right side of eqn. 8 and promote the Russian probability of choosing peace, (thus decreasing Pr_w) the U.S. might reduce Kazakhstan's reliance on nuclear deterrence by increasing their conventional, defensive capabilities to resist aggression, thus increasing $Cr_{I(WAR)}$. Military assistance programs and loans for Hi-Tech equipment might assist in the transformation of the Kazakhstan armed forces into effective fighting units. On the diplomatic front the United States can:

- Support development of regional multiparty security arrangements with a view towards increasing the collective security of the Central Asian nations.
- Support the development of regional cooperative organizations which work for the benefit of member nations and assist in the peaceful resolution of disagreements. Currently, one of the most pressing needs is joint management of water resources.
- Actively oppose the polarization of Central Asia into several hostile camps.

Along with these positive steps the United States can also endeavor to form a coalition of like-minded states to the end of refusing all aid and credits to Kazakhstan if it were in violation of the Non-Proliferation Treaty. This policy should be announced beforehand and its implementation should be automatic. Since this policy of fiscal sanctions would require little effort to implement through the World Bank and similar institutions, it might retain more credibility than the imposition of physical sanctions. By all means, physical sanctions should also be implemented; however, the recent examples of Serbia and North Korea have cast doubt on their effectiveness and reduced their credibility.

Kazakh concerns about security are deep and well founded. They must be satisfied before non-nuclear status is assured. It can be taken as a given, that some time in the next decade ethnic conflict will arise in Kazakhstan, and that when it does there will be Russian political parties which will use this as a justification to call for intervention in Kazakh internal affairs. Any steps that the United States can take to assist Kazakhstan in the solution of its problems of national security are likely to decrease the probability of nuclear conflict.

APPENDIX

DERIVATION OF EQUATIONS

DERIVATION FOR DEPENDENT CASE

$$P_{g\bar{w}} = P_{g|\bar{w}} P_{\bar{w}}$$

$$1. E(u) = V_{g\bar{w}} P_{g\bar{w}} + V_{g\bar{w}} P_{g\bar{w}} + V_{\bar{g}\bar{w}} P_{\bar{g}\bar{w}} + V_{\bar{g}\bar{w}} P_{\bar{g}\bar{w}}$$

$$2. E(u) = V_{g\bar{w}} P_{(g|\bar{w})}(P_{\bar{w}}) + V_{\bar{g}\bar{w}} (P_{\bar{g}|\bar{w}})(P_{\bar{w}}) + V_{g\bar{w}}(P_{(g|\bar{w})})(P_{\bar{w}}) + V_{\bar{g}\bar{w}}(P_{\bar{g}|\bar{w}})(P_{\bar{w}})$$

$$2a. V_{g\bar{w}} P_{g|\bar{w}} P_{\bar{w}} = V_{g\bar{w}} P_{g|\bar{w}} (1 - P_{\bar{w}}) = V_{g\bar{w}} P_{g|\bar{w}} - V_{g\bar{w}} P_{g|\bar{w}} P_{\bar{w}}$$

$$2b. V_{\bar{g}\bar{w}} P_{\bar{g}|\bar{w}} P_{\bar{w}} = V_{\bar{g}\bar{w}} P_{\bar{g}|\bar{w}} (1 - P_{\bar{w}}) = V_{\bar{g}\bar{w}} P_{\bar{g}|\bar{w}} - V_{\bar{g}\bar{w}} P_{\bar{g}|\bar{w}} P_{\bar{w}}$$

$$2c. V_{g\bar{w}} P_{g|\bar{w}} P_{\bar{w}}$$

$$2d. V_{\bar{g}\bar{w}} P_{\bar{g}|\bar{w}} P_{\bar{w}}$$

$$3. E(u) = V_{g\bar{w}} P_{g|\bar{w}} + V_{\bar{g}\bar{w}} P_{\bar{g}|\bar{w}} + P_{\bar{w}} \left[V_{g\bar{w}} P_{g|\bar{w}} + V_{\bar{g}\bar{w}} P_{\bar{g}|\bar{w}} - V_{g\bar{w}} P_{g|\bar{w}} - \right.$$

$$\left. V_{\bar{g}\bar{w}} P_{\bar{g}|\bar{w}} \right]$$

For Subcase 1 $B_{\bar{w}} \neq B_p$, $C_{1\bar{w}} \neq C_{1p}$

$$V_{g\bar{w}} = B_p - C_{1p}$$

$$V_{g\bar{w}} = B_w - C_{1w} - C_2$$

$$V_{\bar{g}rw} = -C_{1w} - C_2$$

$$V_{\bar{g}r\bar{w}} = -C_{1p}$$

And Substituting gives

$$4. E(u) = B_p P_{g|w} - C_{1p} P_{g|\bar{w}} - C_{1p} P_{\bar{g}|\bar{w}}$$

$$+ P_w [B_w P_{g|w} - C_{1w} P_{g|w} - C_{2w} P_{g|w} - C_{1w} P_{\bar{g}|w} - C_{2w} P_{\bar{g}|w} - B_p P_{g|\bar{w}} + C_{1p} P_{g|w} + C_{1p} P_{\bar{g}|\bar{w}}]$$

$$5. E(u) = B_p P_{g|\bar{w}} - C_{1p} + P_w [B_w P_{g|w} - B_p P_{g|\bar{w}} + (C_{1p} - C_{1w}) - C_2]$$

$$6. = B_p P_{g|\bar{w}} - C_{1p} - B_p P_{g|\bar{w}} P_w + B_w P_{g|w} P_w + P_w (C_{1p} - C_{1w}) - P_w C_2$$

$$\text{Since } B_p P_{g|\bar{w}} - B_p P_{g|w} P_w = B_p P_{g|\bar{w}} P_{\bar{w}} = B_p P_{(g\bar{w})}$$

$$\text{And } B_w P_{g|w} P_w = B_w P_{(grw)}$$

$$\text{And } P_w C_{1p} - C_{1p} = C_{1p} (P_w - 1) = C_{1p} P_{\bar{w}}$$

$$7. E(u) = B_p P_{g\bar{w}} + B_w P_{grw} - C_{1p} P_{\bar{w}} - P_w (C_{1w} + C_2)$$

which yields deterrent inequality

$$B_p (P_{g\bar{w}}) - C_{1p} P_{\bar{w}} > B_w (P_{grw}) - P_w (C_{1w} + C_2)$$

or

$$P_w(B_p P_{g|w} - C_{1p}) > P_w(B_w P_{g|w} - C_{1w} - C_2)$$

For Subcase 2 EQN 7 becomes:

$$E(u) = B_p P_{(g|w)} + B_w P_{(g|w)} - P_w C_2 - C_1$$

For Subcase 3 EQN 7 becomes:

$$E(u) = P_g(B) - P_w C_2 - C_1$$

DERIVATION FOR THE INDEPENDENT CASE

$$P_{g|w} = P_g P_w, P_w = 1 - P_w, V_{(t)} P_{(t)} \text{ are invariant with time}$$

1. $E(u) = V_{g|w} P_{g|w} + V_{g|w} P_{g|w} + V_{g|w} P_{g|w} + V_{g|w} P_{g|w}$
2. $= V_{g|w} P_g P_w + V_{g|w} P_g P_w + V_{g|w} P_g P_w + V_{g|w} P_g P_w$
 $= V_{g|w} P_g P_w + V_{g|w} P_g (1 - P_w) + V_{g|w} (1 - P_w) (1 - P_g) + V_{g|w} P_w (1 - P_g)$
- 2a. $= V_{g|w} P_g P_w +$
- 2b. $= V_{g|w} P_g - V_{g|w} P_g P_w$
- 2c. $= V_{g|w} P_w - V_{g|w} P_w P_g +$
- 2d. $= (V_{g|w} - V_{g|w} P_g) (1 - P_w) = V_{g|w} - V_{g|w} P_g - V_{g|w} P_w + V_{g|w} P_g P_w$

$$3. E(u) = P_g(V_{g\dot{w}} - V_{\dot{g}rw}) + P_w(V_{\dot{g}rw} - V_{\dot{g}rw}) + P_g P_w (V_{g\dot{w}} - V_{g\dot{w}} - V_{\dot{g}rw} + V_{\dot{g}rw}) \\ + V_{\dot{g}rw}$$

3 Subcases

$$1. B_w \neq B_p \quad C_{1w} \neq C_{1p}$$

$$2. B_w \neq B_p \quad C_{1w} = C_{1p}$$

$$3. B_w = B_p \quad C_{1w} = C_{1p}$$

For Subcase 1

$$V_{g\dot{w}} = B_p - C_{1p}$$

$$V_{g\dot{w}} = B_w - C_{1w} - C_2$$

$$V_{\dot{g}rw} = -C_{1w} - C_2$$

$$V_{\dot{g}rw} = -C_{1p}$$

$$\text{And } E(u) =$$

$$= P_g(B_p) + P_w(-C_{1w} - C_2 + C_{1p})$$

$$+ P_g P_w (B_w - B_p - C_{1p})$$

For Subcase 2

$$V_{g\dot{w}} = B_p - C_1$$

$$V_{g\dot{w}} = B_w - C_1 - C_2$$

$$V_{\dot{g}rw} = -C_1 - C_2$$

$$V_{\dot{g}rw} = -C_1$$

$$\text{And } E(u) =$$

$$= P_g B_p - P_w C_2$$

$$+ P_g P_w (B_w - B_p) - C_1$$

For Subcase 3

$$V_{g\dot{w}} = B - C_1$$

$$V_{g\dot{w}} = B - C_1 - C_2$$

$$V_{\dot{g}rw} = -C_1 - C_2$$

$$V_{\dot{g}rw} = -C_1$$

$$\text{And } E(u) =$$

$$= P_g(B) - P_w(C_2)$$

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